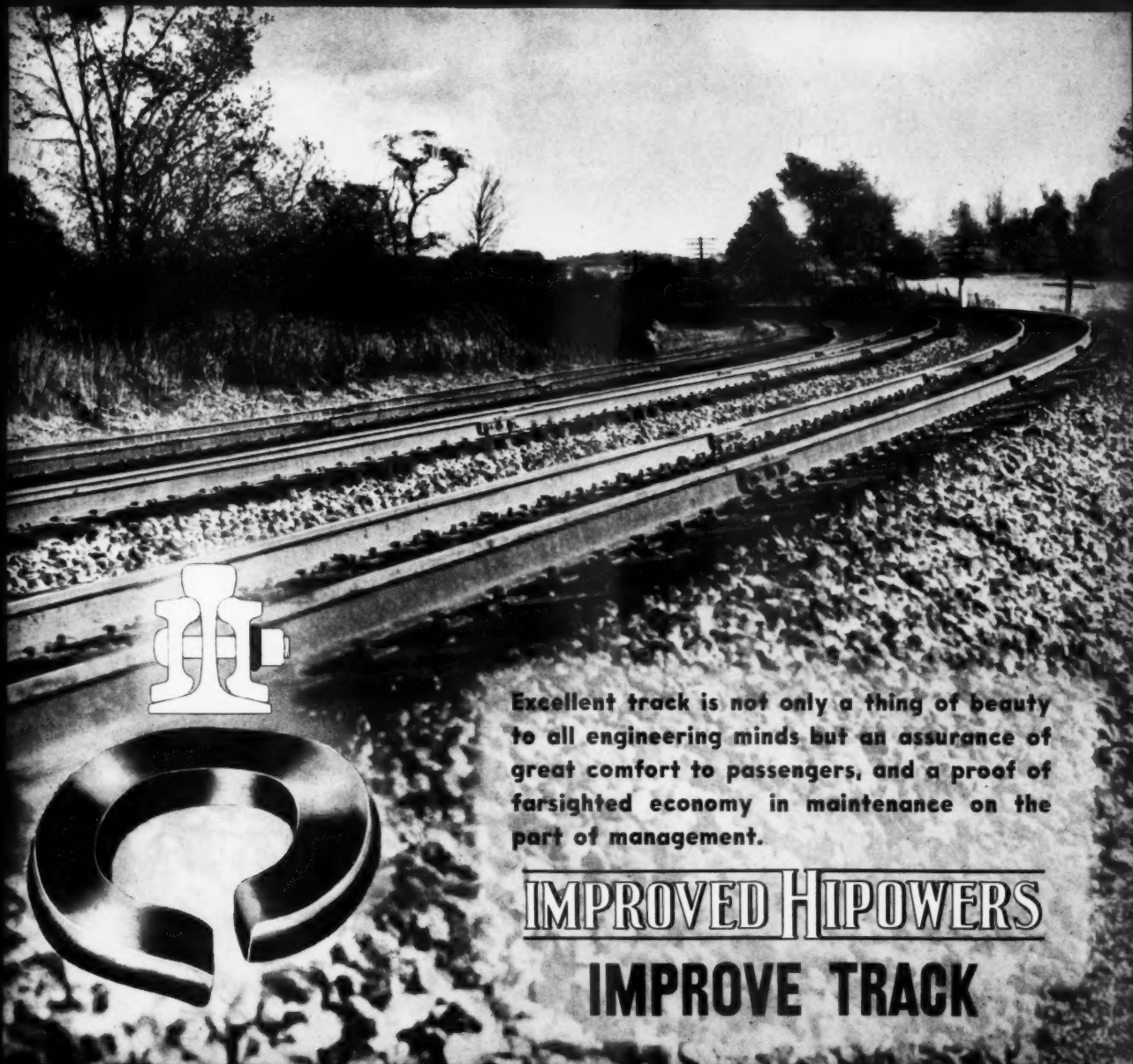


APRIL 1950

# Engineering *and* Maintenance



Excellent track is not only a thing of beauty to all engineering minds but an assurance of great comfort to passengers, and a proof of farsighted economy in maintenance on the part of management.

**IMPROVED HIPOWERS**

**IMPROVE TRACK**

NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY TRACK WASHERS



## RELIANCE HY-CROME SPRING WASHERS help keep the jolts out of joints

- Rough-riding track can be traced to many causes, one of the most common of which is joint bolts equipped with inadequate tension devices which permit looseness in the joint assembly.
- *It costs no more to install and maintain the correct spring tension fastening device.*
- Reliance Hy-Crome Spring Washers are specially designed to successfully cope with specific track conditions and meet various specification requirements. Uniform flattening load — adequate reactive pressure — wide release range — minimum loss of tension — ground, deflected ends protecting bolted parts — full bearing for nut — keep rail joint bolts tighter longer.
- Years of experience in spring washer technique has enabled Reliance to produce Hy-Crome Spring Washers that satisfactorily — automatically compensate for looseness as a result of wear.

# EATON

EATON MANUFACTURING COMPANY

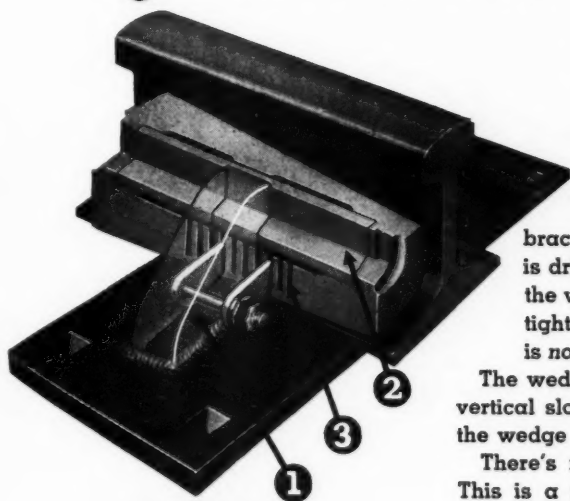


RELIANCE DIVISION, MASSILLON, OHIO

Sales Offices: New York, Cleveland, Detroit, Chicago, St. Louis, San Francisco, Montreal



# Tight... **TIGHT...TIGHT**



Bethlehem's 811 is the rail brace that cannot loosen under shock. No "play" or vibration is possible. Reason: the 811 employs a unique device that makes full use of the wedging principle. Side thrust cannot budge the wedge — cannot pop it out — when it's locked.

The phantom illustration shows clearly how the 811 works. When the steel wedge is driven between the brace (1) and the rail, a tight fit results. The farther the wedge is driven, the tighter the fit. An integral steel spring (2) keeps the wedge under 20,000 lb compression, thereby adding to the tightening effect and eliminating friction. Without friction there is no wear on brace or rail.

The wedge is locked in place by twin pawls that turn down into vertical slots (3). Thus no amount of jarring and jolting can cause the wedge to shift position or back out.

There's no trick to installing the 811 Rail Brace—none at all. This is a final point that has helped make the 811 a choice of leading roads for many years. Any time you say, a Bethlehem man will be glad to give you further details.

**BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.**

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

# Here

is where you meet the public



*Specify* **penta-**  
chlorophenol

## **THE CLEAN WOOD PRESERVATIVE**

For better public relations, specify crossings treated with PENTACHLOROPHENOL.

PENTA is clean and leaves no offensive odor even in hot weather. It effectively protects planking, wood platforms, ties, and car lumber from decay and termites. Be "PENTA-PROTECTED" year around. For further information and technical assistance, write or wire Dow, Dept. PE 48.



**PENTA PROTECTS TIES!** Newly adzed tie surfaces are protected by brushing or machine spraying with PENTACHLOROPHENOL solutions. This is easily done with PENTA, even in coldest weather.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN





# SIMPLICITY for ease of operation

*...with the safety of Certain operation*

The "Feather-Touch" Clutch Control utilizes the power of the engine to throw heavy drum clutches. This is all there is to the device. Compare this with the complications being offered on other similar equipment.

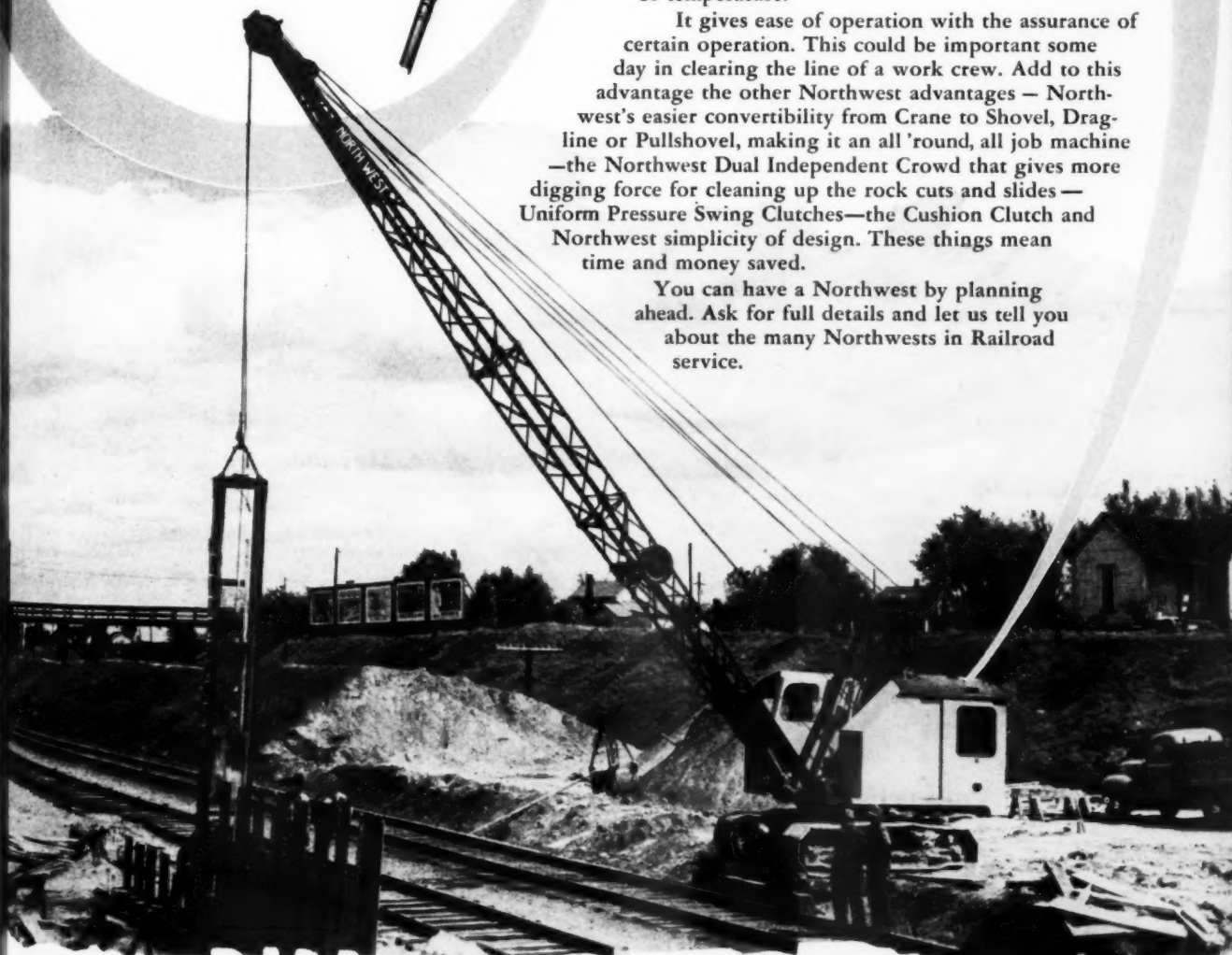


WHEN your operators get on a Northwest out on the line you know it is going to work. Your Northwest will never be shut down because of control failure.

The "Feather-Touch" Clutch Control is a simple mechanical device—a drum, a band, and a toggle mechanism. No tubing winding around the machine, no valves, no pumps, nothing to fill, nothing to leak out, and it is unaffected by weather or temperature.

It gives ease of operation with the assurance of certain operation. This could be important some day in clearing the line of a work crew. Add to this advantage the other Northwest advantages — Northwest's easier convertibility from Crane to Shovel, Drag-line or Pullshovel, making it an all 'round, all job machine — the Northwest Dual Independent Crowd that gives more digging force for cleaning up the rock cuts and slides — Uniform Pressure Swing Clutches — the Cushion Clutch and Northwest simplicity of design. These things mean time and money saved.

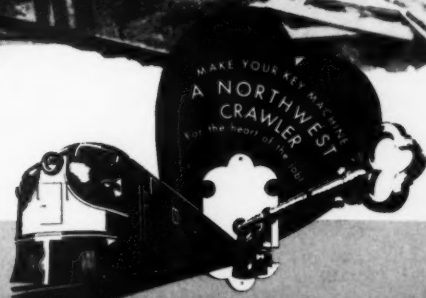
You can have a Northwest by planning ahead. Ask for full details and let us tell you about the many Northwests in Railroad service.



NORTHWEST ENGINEERING COMPANY  
1513 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

# NORTHWEST

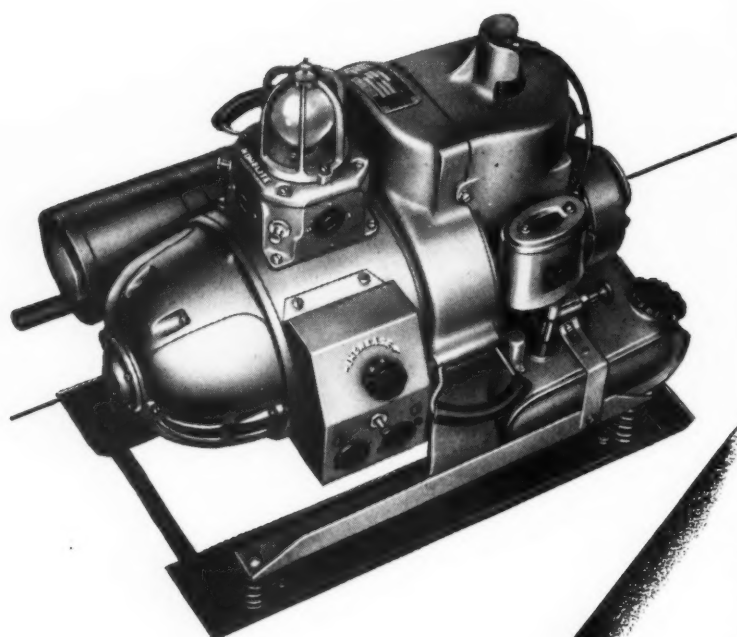
THE ALL PURPOSE RAILROAD MACHINE



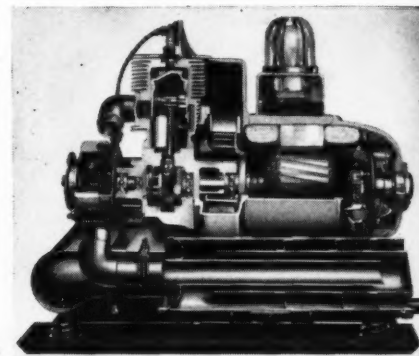
# From Every Angle

A Homelite Carryable Generator

Is the Power Unit for You...



**1. PERFORMANCE.** Once you begin to use a Homelite... yes, even when you see it demonstrated... you immediately appreciate its outstanding performance. Light enough for one man to carry, a Homelite packs the power needed to keep hand tools running at full productive capacity... and floodlights burning at full brightness... at any time at any place in all kinds of weather.



**2. DEPENDABILITY.** Every Homelite Generator though light in weight is a heavy duty unit. No baby stuff about it. For more than a quarter century Homelite engineers have specialized in building carryable gasoline engine units... close to three hundred thousand of them... and they know that to keep a generator going on the job they have to use the finest materials and apply the highest engineering skill.



**3. SERVICE.** Like all pieces of machinery, a Homelite Generator needs, in the long run, a certain amount of servicing... a minimum to be sure. But the availability of Homelite service by nationwide exclusive service shops... completely stocked and manned by experts who can service your Homelite right at your door... makes a whole of a difference when it comes to having a generator that will give you instant power not only where you want it, but also when you want it.

STICK TO THE RULE OF THREE 1. Performance 2. Dependability  
3. Service, and you'll always stick to a Homelite.

PERFORMANCE  
DEPENDABILITY  
SERVICE

## Homelite Corporation

204 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

**FIGURE IT  
IN ALUMINUM**



Alcoa Industrial Building Sheet used  
on Mitchell Power Station, West  
Penn Power Co., Pittsburgh, Pa.

## FOR PLACES YOU DON'T EVER WANT TO PAINT

**Alcoa Industrial Building Sheet**  
gives long life and freedom from maintenance

Faced with the problem of selecting roofing and siding that would stand up in corrosive atmospheres; require a minimum of maintenance... West Penn Power Co. specified Alcoa Aluminum Building Sheet... used it to cover conveyors, machinery sheds and utility buildings. "Resistance to corrosive coal dust and freedom from painting", dictated the choice according to the owners.

Easy to put up in hard-to-get-at places, Alcoa Industrial Building Sheet weighs only 56 lbs. per hundred square feet, can be erected quickly over steel or wood by all standard fastening methods. Low in first cost, it keeps maintenance costs down, too. Keeps its good appearance; resists corrosive effects of industrial smoke and fumes.

For data on application, prices and accessories, call your nearby Alcoa Sales Office, or mail the coupon at the right.

### FACTS FOR CONTRACTORS AND ENGINEERS

**Low Cost**—Alcoa Industrial Building Sheet is low in first cost. Keeps upkeep costs down, too. Can't rust away. Needs no painting.

**Tough and Strong**—25 years on coal tipples, hasn't affected the serviceability of Alcoa Building Sheet. With 4' purlin spacing it will support 80 p.s.f. uniform load (safety factor: 2).

**Available**—Prompt delivery from convenient suppliers. All types of fasteners and flashing accessories in stock.

### For complete details MAIL THIS COUPON, TODAY

Aluminum Company of America  
14700 Gulf Bldg., Pittsburgh 19, Pa.

Please send me engineering and application data on Alcoa Industrial Building Sheet.

Name

Company

Address

City  State

# ALCOA

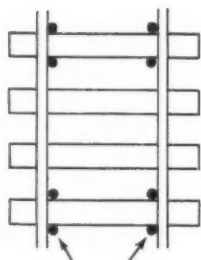
## INDUSTRIAL BUILDING SHEET



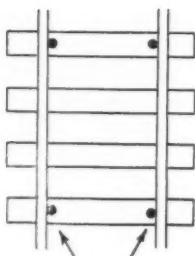
INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT-MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS  
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

It has been frequently stated that M. of W. Departments will have to find ways and means of cutting costs. If this is accomplished, it should follow that things will have to be done differently than in the past — and new devices used.

*We have the answer, where Rail Anchors are concerned!*



Conventional Anchor



Our 1-piece 2-way Compression Anchor

*You can* **SAVE** *as much as* **\$9<sup>12</sup>**  
**per 39 ft. Panel of Track!**

as indicated below

Comparable costs of boxing 8 ties with conventional anchors, and with NO-CREEP anchors. In each case, 8 ties per 39 ft. panel are anchored TWO ways.

Using Conventional Anchor	
32 anchors, estimated cost	\$9.60
Using NO-CREEP Anchor	
16 anchors, cost	4.00
Plus welding (if we do welding) 2c per anchor	.32
Total cost	4.32
Savings on anchorage cost	\$5.28

The NO-CREEP RAIL ANCHOR makes it possible to eliminate line and gauge spikes on each plate where anchor is used as the spring holds down far more than these two spikes.

This produces an added saving of \$3.84 IN SPIKES AND DRIVING based on eight ties per 39 ft. panel of track.

This anchor holds the rail EXACTLY as laid, increases LATERAL strength of track and holds line.

Write off ALL ANCHOR LABOR COSTS: When this anchor is installed it is fully engaged and remains that way automatically under ALL conditions.

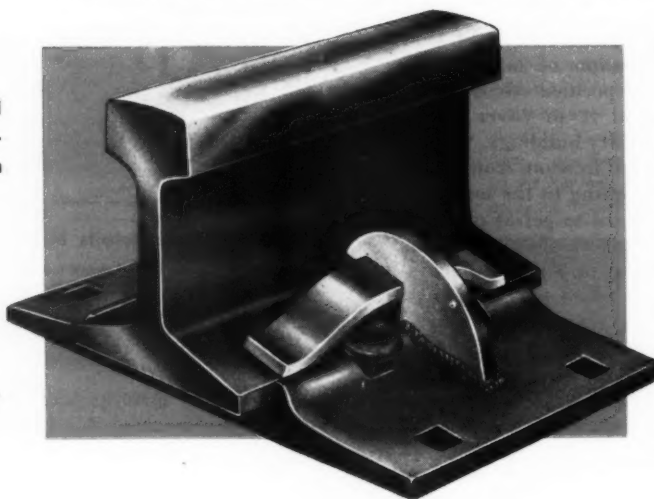
These are important features of an entirely new design of Rail Anchor that was developed of necessity when labor and materials hit all time highs.

### Two-way Compression Anchorage

Remains constantly Engaged  
from time of Installation—  
Without Attention

*Use the*  
**NO-CREEP**  
*Rail Anchor!*

Write for details



**It costs 10c**

every time a trackman stops to fill and light his pipe. How much does it cost to re-set 100,000 Rail Anchors?

The NO-CREEP RAIL ANCHOR is the only fully self-compensating Anchor on the market: it compensates for all weather, TEMPERATURE and Traffic conditions, Continuously. It is self-adjusting; insert it and FORGET IT. Ask the Road-Master.

# G & H RAIL CONTROLS, INC.

Phone BE 8117

5204 Truman Road

Kansas City 1, Mo.

Eastern Representative: Thomas J. Crowley Inc., 230 Park Ave., New York 17, N. Y.  
Southwestern Representative: Alfred Engineering and Equipment Co., 515 Cotton Exchange Bldg., Dallas 8, Texas  
Western Office: Roy H. Weber Co., 68 Post St., San Francisco 4, California





**Speno**  
BALLAST  
CLEANER

## Clean Ballast *at Lowest Cost*

The Speno method results in a self-cribbing track—cleaning that lasts from one general track raise to the next. Long experience in the field, not theory,—equipment that has been steadily improved—means a thorough, lasting job and important maintenance economies in both track and rolling stock.

With the Speno method, stone ballast is twice screened. The two passes are completed in less time than a single pass under other methods. Even a single pass by the Speno method is more effective than a single pass under other methods for the reason that the

Speno method provides the service uniformly where it is required. Speno equipment works under traffic and is the only large ballast cleaning machine that *does not foul trains on adjacent tracks* while in operation.

The speed and capacity of Speno performance can best be gauged by the 1949 record of one of our units. 725 single track miles were cleaned in 1435 hours of actual working time. With the two cuts made, this is equivalent to 1450 miles of ballast cleaning by other ballast cleaning methods.

*We shall gladly work out a program with you.*

**FRANK SPENO RAILROAD  
BALLAST CLEANING CO. INC.**

628 West State Street

Ithaca, N. Y.

# Cancelling "Holidays"

in a

## COATING'S CALENDAR

Look closely at the picture above, and you'll see a spark jumping from the metal test panel to the electrode in the technician's left hand.

That means the coating on the panel is not in a continuous film or is broken . . . protection thereby is not complete. We say the coating has a "holiday" in it.

Sometimes these "holidays" aren't visible to the naked eye. So Flintkote researchers use this method of testing electrically to be *certain* that the coatings tested meet the conditions for which they were formulated. When the tell-tale spark appears . . . back the coating goes for further development until it passes every test with flying colors.

And this is only one of literally hundreds of painstaking tests that Flintkote researchers make on every product. Housed in one of the most modern, efficiently equipped buildings in the industry, the staff of this new research laboratory sets the pace for Flintkote plants from coast to coast . . . to assure better products and better results consistent with lowest possible costs.

Whether your problem is one of coatings for sound deadening, protection from water or weather, fume resistance or acid corrosion . . . adhesives or floorings . . . see what we have now and can offer you for the future.

**THE FLINTKOTE COMPANY**  
*Industrial Products Division*

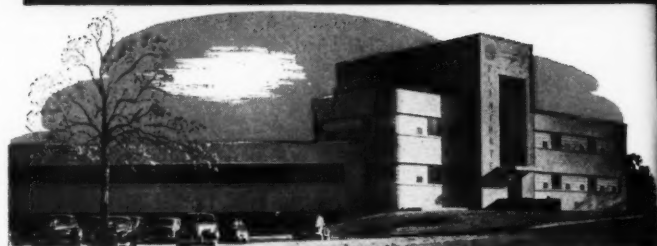
30 Rockefeller Plaza, New York 20, N.Y.

# FLINTKOTE

*Products for Industry*

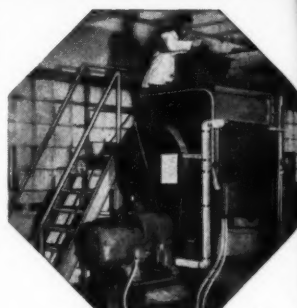


Atlanta • Boston • Chicago Heights  
Detroit • Los Angeles • New Orleans  
Washington • Toronto • Montreal



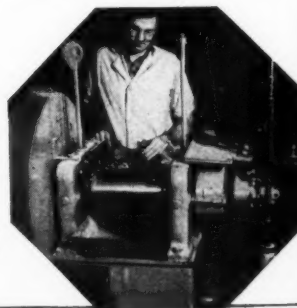
↑ One or more of 24 separate laboratories constantly evaluate Flintkote products step by step from raw materials to field performance, from initial development to mass production. Both Company and Customers profit by this *insurance from research*.

This "pilot scale" ribbon type mixer → enables the laboratory to reproduce production conditions quickly and accurately for research and testing of a variety of asphalt mastics.



← Scientific equipment in use here permits complete analyses when only minute quantities, sometimes no larger than a pinhead, are available. Techniques like this assure purity, reduce cost, speed operation and increase accuracy in the Flintkote Laboratories.

This small scale rubber mill is used to → break down various rubber materials to just the right consistency for use in new products or processes. Full size operation follows in the production of versatile fluid rubber and rubber-like adhesives, coatings and sealers.



# THE *Nalco* SYSTEM OF WEED CONTROL

## A NEW, SAFE METHOD OF SECURING COMPLETE WEED CONTROL

Nalco H-170 combines "contact" or top-killing action with translocation or root-killing action.

Extremely rapid penetration and translocation in the plant.

Extensive root kill retards regrowth.

Low volatility eliminates fire hazard.

Non-conductor—will not disrupt track signal circuits.

Safe to use where livestock may be grazing.

Completely insoluble in water—will not contaminate water supplies. Rainfall after application does not reduce effectiveness.

No mixing required.

**N**ALCO H-170 Weed Killer is a product of nearly five years of laboratory research, tests and field trials on railroad right-of-way. Its combined properties assure a complete top kill of all succulent vegetation, plus extensive root kill on many of the hardiest weed species. H-170 can be applied with any type of sprayer, and is used directly from the drums without mixing or dilution.

Maintenance men are enthusiastic about H-170, not only because of the thorough weed killing, but also because it does not imperil livestock and creates no fire hazard—either in storage or when being applied.

Average right-of-way dosage of Nalco H-170 is one gallon per 1,500 square feet. Where weed growth is high, slightly greater dosage is recommended. H-170 has effectively killed growths up to 30 inches high.

Full information on H-170 is available from your Nalco Representative, or direct from Nalco.

**NATIONAL ALUMINATE CORPORATION**  
6196 West 66th Place • Chicago 38, Illinois  
*Canadian inquiries should be addressed to Albem, Limited  
Burlington, Ontario, Canada*

**SYSTEM • Serving Railroads through Practical Applied Science**

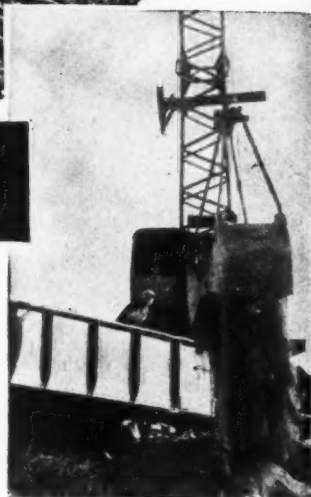


**THIS**

**OR**

**THIS**

*The Difference is  
\$2600 a year per car!*



That's a lot of difference.

Especially when you consider that it represents net savings from just *one* car in *one* type of maintenance-of-way service.

Look at it this way—

It takes time and skilled labor to unload worn-out, obsolete air dump cars or to unload gondolas with a crane. But it takes *less than a minute* for anyone to dump a fully loaded Magor Automatic Air Dump Car.

Figure that your work train costs about \$200 a day. That includes time, labor and equipment. By replacing gondolas or old air dump cars with New Magor Automatic Air Dump Cars, you save at least an hour a day. That's your \$2600 a year savings.

But you'll use your new Magor Air Dump Car for more than just one type of service. Probably everything from ditching to snow removal. And in every operation you are cutting time and labor costs.

Cutting work train costs is just one part of the story. Years of research, experience, field tests and top engineering skill are incorporated into the new Magor Automatic Air Dump Car. They'll operate efficiently and dependably under all conditions.

For additional information about the New Magor Automatic Air Dump Car, write for Bulletin DR-112.

**MAGOR**

*New Magor Cars cost less than \$1.25 a day to own.*

**CAR CORPORATION, 50 CHURCH STREET, NEW YORK 7, N. Y.**

*World's Largest Producer of Air Dump Cars*





## ORIGINAL PRESSURE-TREATED DECKING—1928 PRESSURE-TREATED DECKING REAPPLIED—1943

### T & P gets 15 years' service from Koppers Pressure-Treated Car Decking

A case history from the files of the Texas and Pacific Railroad reveals that . . . "flat cars . . . purchased during the year 1928 were shipped . . . during the years 1942 and 1943, at which time treated decking was reapplied."

These flat cars, decked with Koppers Pressure-Treated Wood, gave T&P fourteen to fifteen years of service while users of untreated car decking received only 3 to 7 years of service during the same period.

Koppers Pressure-Treated Car Decking not only helps keep maintenance costs down; it also helps keep cars off the

repair track and in active, revenue-producing service for longer periods of time.

These practical benefits . . . sharply reduced repair costs and longer periods of continuous service . . . emphasize our claim that pressure-treatment of car decking is not an expense—it is an investment that pays dividends.

We will gladly send you further information showing how Koppers Pressure-Treated Wood will save you time, money and worry when used for car decking, bridges, crossings, pile foundations, pole lines, platforms and other installations.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

## PRESSURE-TREATED WOOD



---

# the A.R.E.A. has



## IN 1938

Walter S. Lacher, then managing editor of *Railway Engineering and Maintenance*, and western engineering editor of *Railway Age*, was selected as executive secretary of the American Railway Engineering Association. This year, he retires from the position which he has held with distinction for the past 12 years. Mr. Lacher, at the time of his appointment, had been a member of the Simmons-Boardman editorial staff for 23 years, starting as assistant engineering editor of *Railway Age* in 1915.



## AGAIN IN 1950

the A.R.E.A. accorded this highly coveted honor to Neal D. Howard, editor of *Railway Engineering and Maintenance* and western editor of *Railway Age*. A member of the Simmons - Boardman editorial family since 1924, Mr. Howard's background and experience make him a logical successor to Mr. Lacher as executive secretary of the leading railway engineering organization.

Neal Howard's background of 26 years as an engineering editorial specialist was preceded by several years' experience in engineering and maintenance-of-way work with the Illinois Central. He has done yeoman service for the many engineering societies of which he is a member. We are confident that he will do honor to the new position he now assumes.



RAILWAY AGE ★ ★ RAILWAY EN

# asked us Again...

## AND ARE WE PROUD!

Yes, for the second time in a little more than a decade, The American Railway Engineering Association has knocked on the door of the Simmons-Boardman Publishing Corporation . . . and accorded one of its editors an honor regarded justly with high esteem among railroad engineers and the maintenance-of-way fraternity — that of executive secretary of the A.R.E.A.

And our pride is justifiable!

It is particularly gratifying when others give such concrete recognition to the abilities of the editors who have received their training and made names for themselves as members of our staff. That this recognition is general is attested not only by the recent action of the A.R.E.A., but by the fact that our editors are in constant demand as authoritative speakers on a wide variety of railway subjects . . . active in promotion and helping with constructive work by the various professional associations . . . and are recognized *wherever there's railroading* as skilled editorial and reportorial specialists in the many branches of railroad work.

Our editors know railroading from actual experience, understand railway problems, and travel thousands of miles each year to gather, sift and disseminate the information that railway men need in their work. These highly-trained, technical- and -business-minded specialists analyze, report and interpret the latest news and developments relating to railway matters—supplying down-to-earth *usable* information on what is taking place in every part of the industry.

That is why the Simmons-Boardman railway papers are considered *must reading* by professional railroaders on every railroad in the United States and Canada (and on many other railroads the world over).

Yes, we have been deprived of another prominent member of our editorial staff. That is the price of leadership—a price we are glad to pay to maintain our high standards of editorial excellence! And, of course, we are ready with a competent and experienced successor to take editorial leadership of our engineering department, in place of our colleague who will henceforth operate in another field of endeavor.

# ENGINEERING AND MAINTENANCE



# RAILROADERS

**"MAGIC CARPET" whisks 100 tons of coal aboard every minute!**



## NEW G-E EQUIPPED PIER HANDLES COAL FASTER, GENTLER!

1. A "magic carpet" of rubber 2 miles long, which gently whisks 6,000 tons of coal an hour from hopper cars to waiting ships, is the eye-opening feature of the new \$8,000,000 Chesapeake and Ohio Pier 14 at Newport News, Va. Four mobile towers move to any hatch open-

ing, so that further movement of ships, once they are berthed, is unnecessary. And for dependable power, Pier 14 relies completely on General Electric equipment, all the way from conveyor drives to yard lighting. Here's another example of broad scale G-E electrification at work.



2. The loaded coal hopper cars are fed by gravity from an 800-car storage yard, roll past the scale house where they are weighed while in motion, and coast down 2 "barney" hauls (above). A "barney" or "mule" pushes them up the incline to the car dumpers.



3. Each "barney"—a cable operated pushing unit—is powered by a G-E 4-unit motor-generator set (above) which in turn drives two 250-hp G-E motors. These motors are geared to the cable drum which is used to pull one or two loaded hoppers at a time up the incline.

GENERAL  ELECTRIC

152-9



# DIGEST

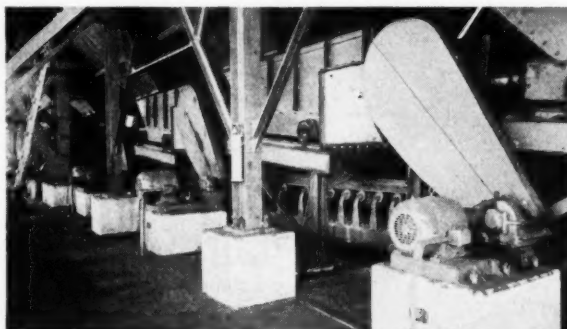
News and notes about  
**GENERAL ELECTRIC** products  
for the railroad industry



4. G-E control equipment is used throughout the C&O's new pier. As illustrated by this metal clad control (above), these units are completely metal enclosed to protect personnel. They come in compact, assembled "packages"—all ready for installation.



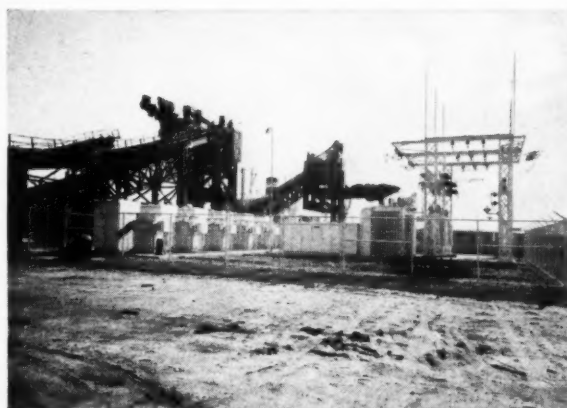
5. The cars are spotted on dumpers (above) which empty coal into the hoppers below. Equipped with 2 G-E 40-hp ac motors, G-E controls and limit switches, each of these rotary dumpers upturn a 70-ton car, empty it, right it again—all in 60 seconds.



6. The coal in the dumper hoppers is fed onto collecting belts, each of which is driven by a 50-hp totally enclosed, fan-cooled G-E Tri-Clad motor (above). These motors provide 3-way protection against physical damage, electrical breakdown, and operating wear and tear.



7. On each of 4 main conveyors, the coal is carried to a tower and loading boom where it is lowered into the hold of a ship. The drive for each main conveyor belt (above) is a 125-hp G-E Tri-Clad motor plus a 30-hp G-E Tri-Clad motor to reduce slack tension on the belts.



8. From this 22 KV G-E "package" substation (left) current is distributed to 6 G-E outdoor load-center unit-substations, and from there to various G-E Cabinetrol motor control units. Selective switching in the substation permits energizing one-half of the pier at a time or feeding both halves from one transformer bank in case of emergency.

## Power is critical at Pier 14!

Excessive outages can't be tolerated. That's one reason why reliable G-E equipment was specified "down the line." Your road may never build a coal pier—but it will always be interested in getting electrical equipment it can count on, whether it be for keeping switches snow free or for running a diesel testing set. Why not take advantage of G-E experience in railroad electrification? Your nearest office will be glad to help. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

**SAVE...**  
**TIE RENEWAL TIME**  
*and Cost!*  
 WITH A  
**WOOLERY**  
**TIE CUTTER and UNDERCARRIAGE**

• PIONEER MANUFACTURERS  
 OF RAILWAY MAINTENANCE  
 EQUIPMENT SINCE 1917

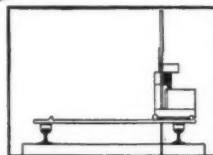
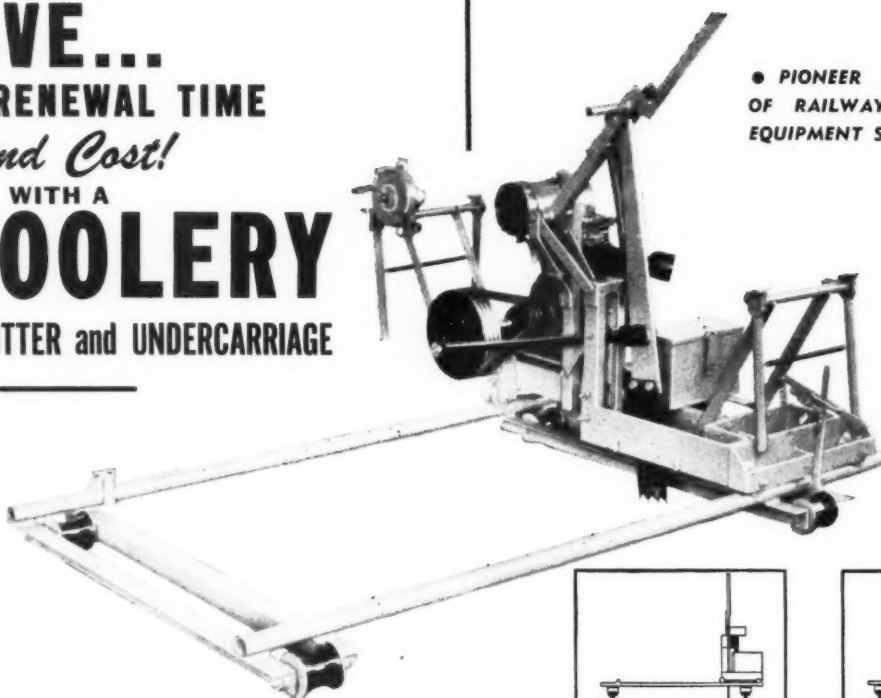


FIG. 1—tie cut at one end inside rail with Woolery tie cutter.

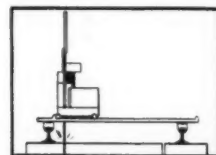


FIG. 2—Tie Cutter moved across on undercarriage for second cut on other end of same tie . . . without lifting or turning.

**REPLACE MORE TIES PER DAY...  
 AT LOWER COST!**

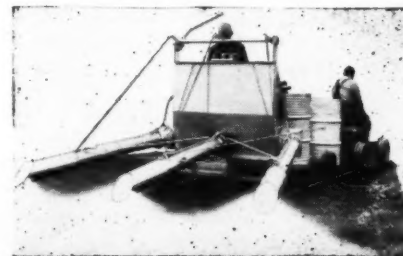
In these days of heavy high speed rail traffic, need for continuous replacement is a necessity.

With a WOOLERY Tie Cutter and Undercarriage, one man can cut tie into three sections without turning machine . . . Permits fast easy removal of old tie without disturbing ballast . . . gives new tie a firm safe bed to rest on. Entire cutting operation requires less than one minute . . . allows operator to remain just ahead of removal gang. Close cooperation in crew results in more work done per day at lower cost per tie.

MAKE A COMPARISON—see how you can reduce tie replacing costs with a WOOLERY Tie Cutter and make your maintenance dollar go farther.

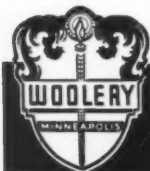


**WOOLERY PB-S WEED BURNER**  
 Three burner model . . . Burns 15 ft. swath 1 trip, 25 ft. second. Enclosed cab.



**WOOLERY PB-B WEED BURNER**  
 Three burner type, trailer mounted. Burns 15 ft. swath 1 trip. Burns all types weeds.

WRITE FOR COMPLETE INFORMATION NOW !



**WOOLERY MACHINE COMPANY**  
 MINNEAPOLIS MINNESOTA

Pioneer Manufacturers of **RAILWAY MAINTENANCE EQUIPMENT**

RAILWAY WEED BURNERS • MOTOR CARS • FLANGWAY CLEANERS • TIE CUTTERS • TIE PLATE SPACERS • RAIL JOINT OILERS • CREOSOTE SPRAYERS

EXCLUSIVE EXPORT REPRESENTATIVES: PRESSED STEEL CAR COMPANY, INC., PITTSBURGH, PENN.

# ADDITIONAL INFORMATION

## On Any of the Products Mentioned in This Issue

Below is a complete index of the products referred to in both the editorial and advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and stamped postcards in requesting it. In each case give name of product and page number. The information will come to you directly from the manufacturer involved, without any obligation on your part.

### Products Index

<b>A</b>		Cribbing Machines	342, 343
Acetylene		Culverts	329, 400
Adjustable Rail Braces		Cushioning Material	334
Air Compressors		327, 399	
Air Cooled Engines			
Air Dump Cars			
Aluminum Products			
Anchors, Rail			
Arc Welders			
<b>B</b>			
Back Hoes			
Ballast Cleaners			
Bolts			
Bonding Drills			
Bridge Deck Slabs			
Brush Killers			
Brush Killing Chemicals			
Building Siding			
Bulldozers			
<b>C</b>			
Car Bolts			
Car Replacers			
Carbide			
Cars			
Cement			
Chain Saws			
Chemical Weed Killers			
Clamshell Buckets			
Clean Preservatives			
Coal-Ore Bridges			
Coatings			
Concrete Culvert Pipe			
Corrugated Metal			
Cranes			
309, 338, 383, 396, 398, 399, 404			
Crawler Cranes			
Crawler Tractors			
Creosote Sprayers			
Cribbing			
<b>D</b>			
Derails			
Diesel Electric Cranes			
Diesel Electric Locomotive Cranes			
Draglines			
Drills			
Dump Cars			
<b>E</b>			
Earthmoving Equipment			
Electric Control Equipment			
Electric Motors			
Electric Plants			
Electric Snow Melters			
Electric Substations			
Electric Tie Tampers			
Electric Tools			
Electrodes			
Engines			
<b>F</b>			
Fairleaders			
Fire Extinguishers			
Flame Hardening Process			
Flangeway Brackets			
Flangeway Cleaners			
Flexible Shaft Grinders			
Flooring			
Foot Guards			
Foundation Piles			
<b>G</b>			
Gasoline Engines			
Gasoline Tie Tampers			
Generator Service			
Generators			
310, 331, 332, 333, 380, 398, 399			

Product and Page No. ....

Name ..... Title or Position ..... Company ..... Address ..... City ..... Zone ..... State ..... (Please Fill Out Card in Full)



**BUSINESS REPLY CARD**  
First Class Permit No. 32418, Sec. 510 P.L. & R. Chicago, Ill.

**RAILWAY ENGINEERING & MAINTENANCE**  
30 Church Street  
New York 7, New York

READER SERVICE DEPT.

April, 1950

**Please send me additional products information as requested below**

☐ Literature Only    ☐ Desire to see Representative    ☐ Price Data

Product and Page No.

3  
4  
5  
6

20  
20  
20  
20

Name \_\_\_\_\_

Title or Position

**Company**

**Address** ..... **City** .....

**(Please Fill Out Card in Full)**

Zone..... State.....

Grinders	401
Grouting	330
Guage Rods	402
Guaging Tools	402
Guard Rail Bolts	400
Guard Rail Clamps	402
Guard Rails	402

## H

Heel Guards	402
Hoists	398
Hook Bolts	400
Hydraulic Jacks	401

## 1

Impactors .....399

## J

**Jacks** -----346, 401

## L

Lag Screws .....	400
Lever Jacks .....	401
Locomotive Cranes 383, 396, 404	
Lubricators .....	339
Lumber, Pressure Treated .....	392

## M

Measuring Tapes	398
Motor Cars	322, 350
Motor Generator Sets	320, 321
Motor Graders	347

○

On-Track Tie Tamperers	342, 343
Oxy-Acetylene Service	-----341
Oxygen	-----349

P

Pads	334
Pentachlorophenol	308, 391
Piles	326
Piling	400
Pipe Culverts	329
Pneumatic Tie Tamperers	327
Portable Rollers	398
Power Jacks	346
Power Scythes	380
Power Units	
310, 331, 332, 333, 347, 399	
Pressure Grouting	330
Pressure Treated Wood	317, 392
Protective Coatings	314
Pull Shovels	309
Pumps	394, 401, 403

## R

Rail Anchors	312, 336, 381
Rail Braces	307

Rail Cranes	396,	399
Rail Drills	385,	399
Rail Grinders		401
Rail Joint Oilers		322
Rail Lubricators		339
Rail Saws		383
Rail Tonges		402
Roller Bearings		333
Rollers	398,	399
Roofing - Aluminum		360
Roofing, Corrugated	344,	348
Rotary Pumps	394,	401
Rules	379,	399
Rust Preventives	325,	329

**S**

Saws	385, 399,	401
Screw Jacks		401
Shovels	309,	338
Siding, Corrugated	344,	345
Skid Shoes		402
Snow Flangers		402
Snow Plows		402
Sprayers		399
Spring Washers	305, 306,	397
Step Joints		402
Switch Point Guards		402

## T

Tapered Roller Bearings	335
Tapered Steel Piles	328
Tapes	379, 391
Tie Cutters	322
Tie Pads	334
Tie Plate Spacers	322
Tie Tampers	
327, 331, 332, 333, 342, 343,	
352, 385	
Timber	391
Timber Bolts	400
Tractor Backhoes	328
Tractors	328, 347, 397

## U

Unit Tie Tamper -----352, 388

## W

Washer Nuts	401
Washers, Spring	305, 306, 397
Water Test Kits	379
Weed Burners	322
Weed Control	315, 337, 390, 395
Weed Control Service	395
Weed Killers	
315, 337, 340, 380, 382, 390,	395
Welding Machines	347
Wheel Silencers	379
Wheel Stops	402
Wheel Tractors	328
Wood Preservation	308, 317, 391
Wrecking Cranes	404

Postage  
Will be  
Paid by  
Addressee

**BUSINESS REPLY CARD**

First Class Permit No. 32418, Sec. 510, P.L.&R. Chicago, Ill.

# RAILWAY ENGINEERING & MAINTENANCE

30 Church Street

**New York 7, New York**

**READER  
SERVICE DEPT.**

**No Postage  
Stamp  
Necessary If  
Mailed in the  
United States**





**AVOID THIS....**



**OBTAIN THIS....**



**WITH NO-OX-ID**

## LUBRICATE AND PREVENT RUST ON RAIL JOINTS WITH NO-OX-ID "A SPECIAL"

Notice in the first photograph above, how the bolt holes in the unprotected rail ends have worn oval, resulting in great strain on track bolts and probable breakage. NO-OX-ID "A Special" will prevent conditions like this and from a labor standpoint, it would cost no more to apply NO-OX-ID than it would to apply an inferior substitute. NO-OX-ID is a proved material for rail joint lubrication and rust prevention. Its weathering properties assure long service life.

For complete protection against corrosion on rail joints, seal the NO-OX-ID "A Special" in with NO-OX-ID Joint Bar Filler, which supplies a tough plastic plug for the ends of the joint bars. It keeps out brine, abrasives and moisture and insures long, trouble-free service from NO-OX-ID "A Special."

Apply low cost NO-OX-ID protection to your railroad operation for greater safety—low maintenance cost. NO-OX-ID has given outstanding results in official field tests.

**DEARBORN CHEMICAL COMPANY**  
General Offices: 310 South Michigan Avenue • Chicago 4, Illinois

**Dearborn**

Reg. U. S. Pat. Off.

**THE LEADER IN RUST PREVENTIVES  
BOILER WATER TREATMENT**

**NO-OX-ID**  
IRON + **OX** = RUST



**SEND FOR THIS  
HOW-TO-DO-IT  
BULLETIN**

*Mail the coupon for this guide to rail joint protection. It tells you application procedure; proper brushes to use, estimates on quantities and costs for various weights of rail.*

DEARBORN CHEMICAL COMPANY  
310 S. Michigan Ave., Dept. RE  
Chicago 4, Illinois

Please send me ( ) copies of your new Bulletin . . . "How to Protect Rail Joints."

Name.....

Company.....

Address.....

City.....State.....

## MONOTUBE STEEL PILES save time, cut costs on "hard-to-get-to" job!

**Y**OU'LL get new ideas about the savings and conveniences with Monotubes from the job pictured here.

It's a foundation for an overpass to carry coal cars from a strip mine. Naturally, it has to be strong and rigid—to withstand the multiple-ton weights of loaded coal cars. Construction was wanted quickly.

### FAST "DRIVING" RECORD!

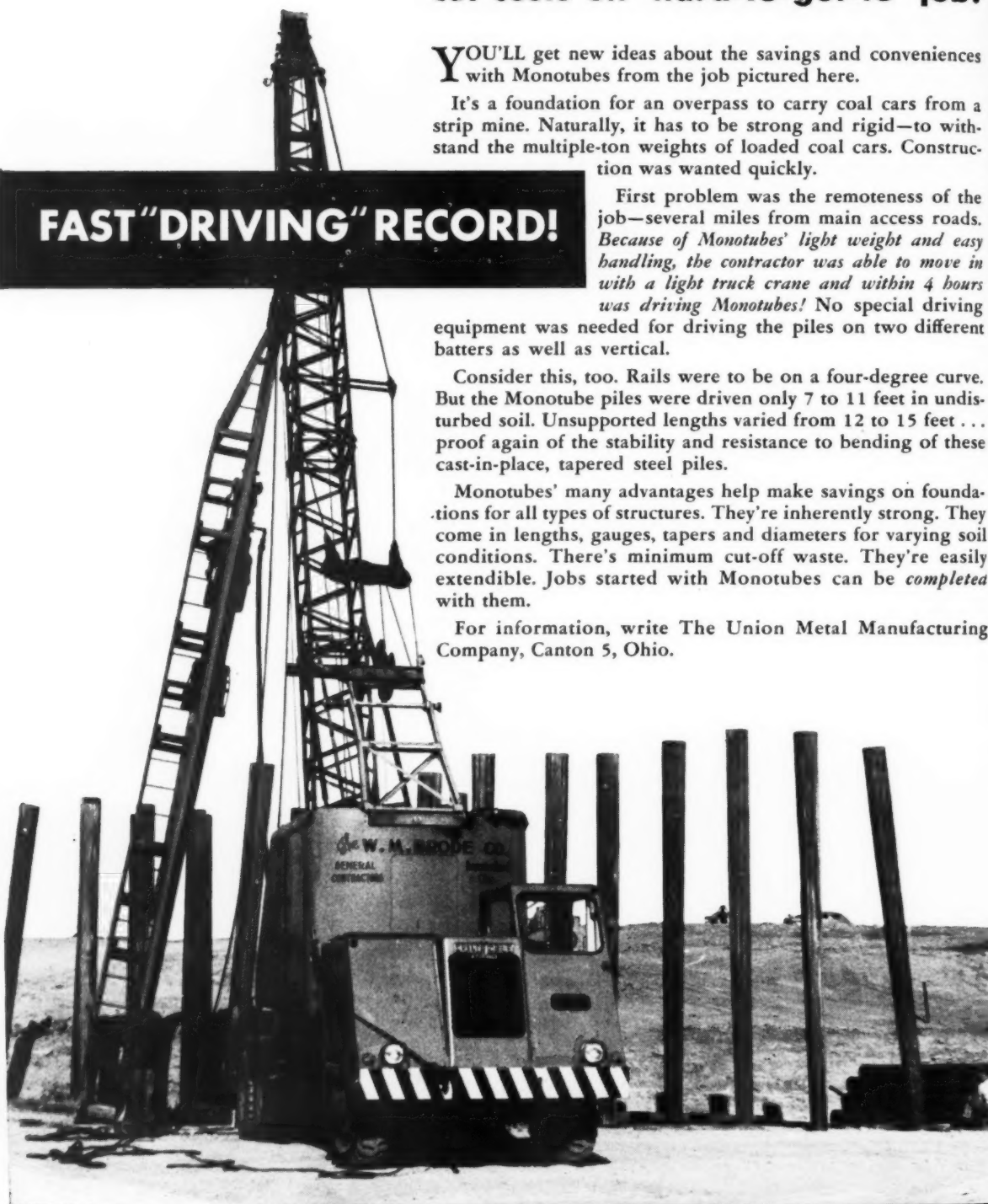
First problem was the remoteness of the job—several miles from main access roads. *Because of Monotubes' light weight and easy handling, the contractor was able to move in with a light truck crane and within 4 hours was driving Monotubes!* No special driving

equipment was needed for driving the piles on two different batters as well as vertical.

Consider this, too. Rails were to be on a four-degree curve. But the Monotube piles were driven only 7 to 11 feet in undisturbed soil. Unsupported lengths varied from 12 to 15 feet . . . proof again of the stability and resistance to bending of these cast-in-place, tapered steel piles.

Monotubes' many advantages help make savings on foundations for all types of structures. They're inherently strong. They come in lengths, gauges, tapers and diameters for varying soil conditions. There's minimum cut-off waste. They're easily extendible. Jobs started with Monotubes can be completed with them.

For information, write The Union Metal Manufacturing Company, Canton 5, Ohio.



Overpass construction at Cadiz, Ohio.  
Contractor: The W. M. Brode Company, Newcomerstown, Ohio.

## UNION METAL

*Monotube Foundation Piles*

Ingersoll-Rand

**SPOT-AIR**

# THE IDEAL SECTION-GANG *Compressor*

air to tighten track bolts ...

air to grind ...

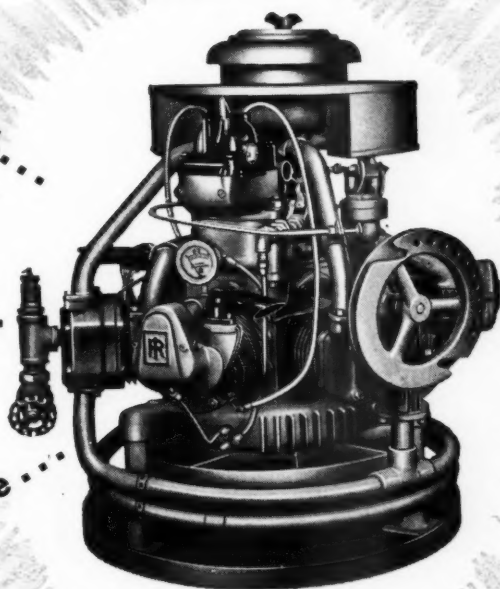
air to tamp ...

air to spike ...

air to paint ...

air to break ice ...

air to dig ...



## THERE'S NO OTHER COMPRESSOR LIKE IT...

The new SPOT-AIR Compressor is Ingersoll-Rand's latest contribution to the field of railroad maintenance equipment. This little gasoline-powered unit is the lightest and most compact section-gang compressor yet developed.

It can be easily carried by two men or moved from job to job on a section car. For even greater portability, the rubber-tired wheelbarrow type mounting makes it possible for one man to transport the SPOT-AIR and Air Tools.



In addition to being able to run two I-R tie-tampers, the SPOT-AIR is ideal for operating Ingersoll-Rand's drills, grinders, impact wrenches, paving breakers and many other I-R Air Tools. You'll find innumerable uses for it on all types of jobs.

For full information on the remarkable SPOT-AIR compressor, and I-R Track Tools, write or phone any of Ingersoll-Rand's twenty-six Branches, located in all the larger cities.



# Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

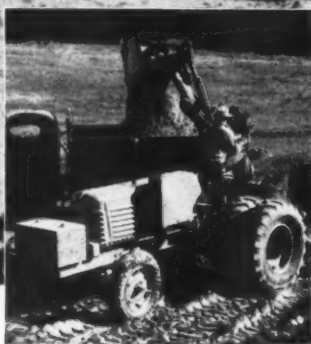
222-11

**ORIGINATORS OF THE MECHANICAL TIE TAMPER**

# NOW

## A Tractor-Mounted All-Hydraulic Backhoe!

Here's a great new profit-making tool for contractors, cities, public utilities and towns. The New Oliver-Ware Hydro-Trencher is an all-hydraulic backhoe mounted on Oliver Industrial "77" or "88" Tractors. It's a smooth-acting, simply operated unit that will do a job comparable to much higher priced conventional backhoes . . . outperform many!



*A Swing Loader Bucket Attachment is available for use with the Oliver-Ware Hydro-Trencher and can be installed in a few minutes.*

### THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors



#### Note these profit-making features:

**SIMPLE OPERATION.** Smooth, finger-tip control hydraulic operation eliminates operator fatigue. Any man can operate this machine immediately . . . specially trained operators are not required.

**SAFETY.** No cables to break . . . no slipping brakes. Safety feature in hydraulic system reduces wear and tear on engine. Engine speed seldom has to go beyond idling.

**COMPACTNESS.** Unit can work in areas where truck and crawler mounted units cannot work.

**MOBILITY.** Tractor-mounted unit moves easily and quickly from job to job under its own power and is ready to dig on arrival.

**STABILITY.** Individually controlled hydraulic outriggers allow operation from a level position . . . hold tractor in place.

**VERSATILITY.** Digs in any kind of ground . . . over 10 feet deep at speeds comparable to any conventional backhoe. Hydraulic controls give boom down pressure for fast digging . . . a full bucket every time.

For the complete story on this new, profit-making unit, mail the coupon.

THE OLIVER CORPORATION,  
Industrial Division  
19300 Euclid Ave., Cleveland 17, Ohio

Gentlemen:

Send me the facts on the new Oliver-Ware Hydro-Trencher.

Name.....

Company.....

Address.....

City.....State.....





You can bridge small streams quickly and more economically by enclosing them in a packaged Armco MULTI-PLATE Structure.

They are delivered to the job site ready to install as Pipe, Arches or PIPE-ARCH. The lightweight prefabricated sections can be quickly bolted together by a small crew of unskilled workmen. There are no forms to construct and no time is lost for curing. Backfilling is done directly against the metal. The whole job moves fast and labor costs are low.

Maintenance is no problem with Armco Drainage Structures. Corrugated metal design assures ample strength to carry railway or highway loads. You are assured long, lasting service.

There is an Armco Structure to meet almost every drainage need. Plain Armco Corrugated Metal Pipe is fine for normal service, ASBESTOS-BONDED Pipe combats severe corrosion, and PAVED-INVERT Pipe protects against erosion. And either standard PIPE-ARCH or MULTI-PLATE PIPE-ARCH will do the job where headroom is limited.

Try an Armco Drainage Structure on that next job. You'll save time and money. Write today for complete information. Armco Drainage & Metal Products, Inc., 4240 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation



# ARMCO DRAINAGE STRUCTURES





The Empire Builder along Puget Sound near Seattle

## **PRESSURE GROUTING** *is Profitable for Great Northern*

**P**ORTLAND CEMENT pressure grouting is proving a profitable investment for the Great Northern Railway. Comparative performance records before and after the stabilization program launched in 1946 show that this Great Northern investment in track stabilization is returning dividends in four different ways:

**1. SAVINGS IN MAN-HOURS**—The reduction in maintenance man-hours alone paid for the cost of pressure grouting in some sections the first year. Elsewhere savings are expected to offset the entire cost of the grouting in periods up to three years.

**2. SAVINGS IN BALLAST**—On the first three sections grouted, totaling 38,258 ft. of track, portland cement pressure grouting saved nearly 8,000

cu.yd. of ballast in resurfacing. Further savings will accrue each year.

**3. IMPROVED OPERATING CONDITIONS**—Many slow orders of long standing were lifted. Increased speeds of as much as 40 mph. became possible.

**4. REDUCTION IN SHIMMING**—Much less shimming was required after pressure grouting on many sections of track that heaved badly during freezing weather.

More than 55 major railroads are using pressure grouting to eliminate soft spots, stabilize fills, improve operating conditions and increase passenger comfort. Write today for free technical information. Distributed only in U.S. and Canada.

## **P O R T L A N D   C E M E N T   A S S O C I A T I O N**

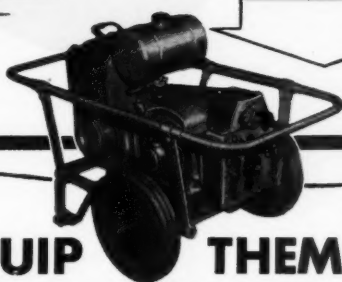
DEPT. 4-27, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work



# Here's the Way to MULTIPLY THE EFFECTIVENESS OF Reduced Section Gangs

**M-1 POWER PLANT**  
Capacity: 1.25 KVA.  
21" wide x 25" long  
(38" over handles) x  
25" high. Weight: 243  
lbs.



## EQUIP THEM WITH JACKSON 2-TAMPER OUTFITS

By any comparison you wish to make, you'll find a JACKSON M-1 Power Plant and 2 standard JACKSON tie tampers the finest means of mechanizing your reduced section gangs (as small as 2 men and a foreman) and the perfect solution to this phase of the problem presented by the 40-hour week. The M-1 is small enough to be easily tossed onto a motor car by two men. It is equipped with permanent magnet generator which requires no adjustment or maintenance and is the most reliable source of power imaginable. Furthermore it generates both single phase and 3-phase 115 volt, 60 cycle AC and, therefore, in addition to operating 2 tampers can be

used for lights and the operation of various power tools.

JACKSON tie tampers have been proven, times without end, the best of manually guided tampers for spot tamping and such out-of-face work as is usually done by section gangs. Likewise, in removing fouled ballast, removing ice or grading work in frozen ground, a section gang so equipped will not only do several times the work that can be done manually but also far outstrip that which can be done with other tampers.

Better investigate the JACKSON 2-Tamper Outfits. They're the perfect answer to the problem of adequate section maintenance with fewer men. Drop us a line.



**ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.**

**ASK THE MEN  
WHO USE**

# JACKSON

## MULTIPLE TAMPERS

Better than a thousand words in proclaiming the tremendous success of the JACKSON MULTIPLE TAMPER as the best means of achieving finest track at the lowest possible cost, is the following list of users:

\*BOSTON AND MAINE RAILROAD  
\*THE ATCHISON, TOPEKA & SANTA FE RAILWAY SYSTEM  
\*CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY  
NEW YORK CENTRAL SYSTEM  
DULUTH, MISSABE & IRON RANGE RAILWAY COMPANY  
\*GREAT NORTHERN RAILWAY COMPANY  
WABASH RAILROAD COMPANY  
\*MISSOURI PACIFIC RAILROAD COMPANY  
INTERNATIONAL-GREAT NORTHERN RAILROAD COMPANY  
CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RAILROAD COMPANY  
CHICAGO SOUTH SHORE AND SOUTH BEND RAILROAD  
MORRISON-KNUDSEN COMPANY (Contractors)  
FORT WORTH & DENVER CITY RAILWAY COMPANY  
THE COLORADO AND SOUTHERN RAILWAY COMPANY  
THE NEW YORK, CHICAGO & ST. LOUIS RAILROAD COMPANY  
ST. LOUIS — SAN FRANCISCO  
MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE  
CHICAGO, ST. PAUL, MINNEAPOLIS AND OMAHA

LEHIGH & NEW ENGLAND  
DELAWARE, LACKAWANNA & WESTERN  
\*ILLINOIS CENTRAL RAILROAD COMPANY  
\*SEABOARD AIR LINE RAILROAD COMPANY  
\*CHICAGO, ROCK ISLAND & PACIFIC RAILROAD COMPANY  
LOUISIANA & ARKANSAS RAILWAY COMPANY  
THE KANSAS CITY SOUTHERN RAILWAY COMPANY  
THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY COMPANY  
CHICAGO GREAT WESTERN RAILWAY COMPANY  
\*CHICAGO AND NORTH WESTERN RAILWAY COMPANY  
BESSEMER & LAKE ERIE RAILROAD COMPANY  
\*NORFOLK AND WESTERN RAILWAY COMPANY  
THE ANN ARBOR RAILROAD COMPANY  
THE TEXAS AND PACIFIC RAILWAY COMPANY  
\*SOUTHERN RAILWAY SYSTEM  
WM. A. SMITH CONTRACTING COMPANY

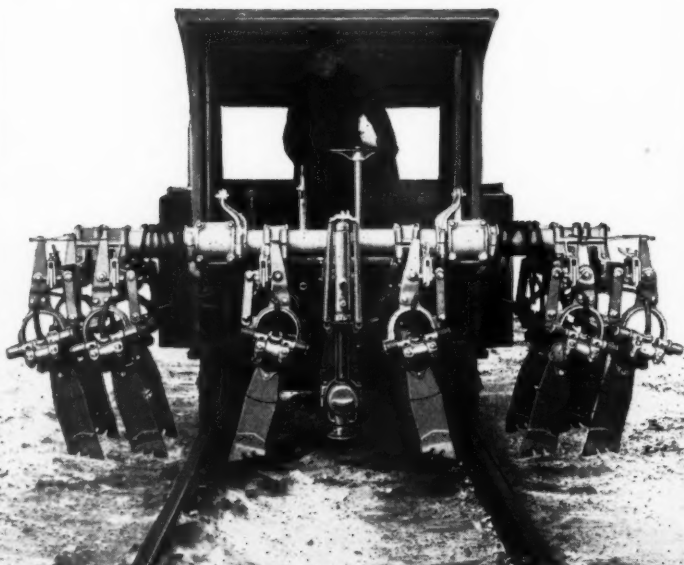
Why not call in one of our thoroughly practical field engineers and let him show you how JACKSON MULTIPLE TAMPERS can help you effect tremendously important savings in time and money while achieving the finest kind of track? Drop us a line.

\* — Indicates repeat purchasers

**\*THE ONLY TAMPER WITH WHICH PERFECT TRACK CAN BE**

In the vast majority of operations no spot tamping or follow-up of any kind is necessary.

Note the high degree of visibility both forward and through the rear of the cab.



Upper half of the cab may be quickly and easily removed for handling with crane — replaced for weather protection.

**ELECTRIC TAMPER & EQUIPMENT COMPANY**



P

Y

ers an  
elp yo  
y whi

I B PUT UP IN JUST ONE OPERATION

the  
cty  
ed  
th  
for  
on.



**OUTSTANDING IMPROVEMENTS  
IN THE 1950 MODEL:**

1. Larger, More Powerful Engine
- 
2. Heavy Duty Transmission
- 
3. Improved Hydraulic Pump of Greater Capacity
- 
4. Externally Packed Rams
- 
5. Improved, Positive, Quickly Adjustable Tamper Suspension
- 
6. Demountable Cab
- 
7. Larger Fuel Tank
- 
8. Improved Tamper Blades and Tips
- 
9. Greater Speed of Operation

NY LUDINGTON, MICHIGAN

# FABCO TIE PADS

## REDUCE MECHANICAL WEAR OF TIES

By reducing the plate cutting of ties Fabco Tie Pads save you money in two ways. (1) They extend tie life. (2) They reduce to a minimum the need for regauging.

### 17 REASONS WHY YOU SHOULD USE FABCO TIE PADS

1. Prevent cutting of ties by plates.
2. Extend tie life.
3. Reduce labor costs by less frequent tie renewal.
4. Maintain gauge.
5. Save labor of regauging.
6. Have exceptionally long life — comparable to tie life.
7. Withstand extremes of temperature, moisture, brine, sand.
8. Have great strength under load.
9. Do not squash or crush under extremes of temperature or long service.
10. Permanent resiliency assures tight spikes.
11. Resilient winter and summer.
12. Cushion track structure from impacts.
13. Assist in maintaining line and surface.
14. Large tie plates unnecessary.
15. Compensate uneven bearing surfaces.
16. May be transferred from one location to another.
17. Low pad cost.

*Made by the Makers of Fabreeka  
with over 15 Years Experience in Track*

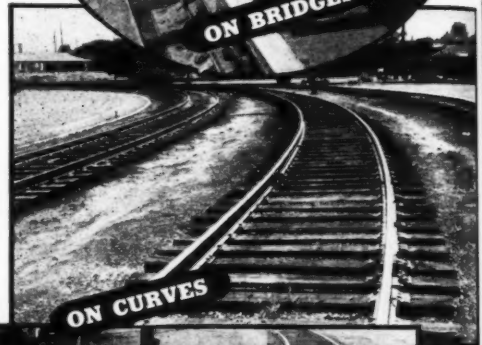
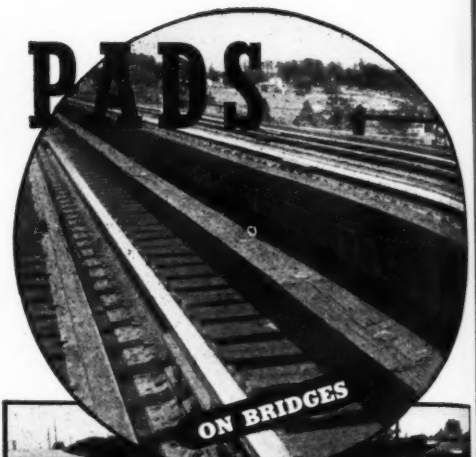


**FABREEKA  
PRODUCTS COMPANY**  
INCORPORATED

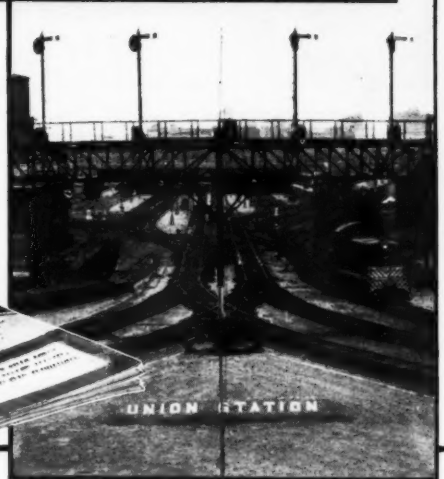
222M SUMMER STREET  
BOSTON 10, MASS.

NEW YORK  
DETROIT  
CHICAGO

PHILADELPHIA  
SPARTANBURG  
OAKLAND



and  
**STATION  
APPROACHES**



Please send me latest Fabco Tie Pad literature.

NAME .....

FIRM .....

ADDRESS .....

# How TIMKEN® bearings help 210 men get places in a hurry

THE Northwestern Motor Company gang car shown below seats 10 men comfortably. And it can haul another 200 in trailers. It's designed and built with outstanding strength—for transporting men fast, dependably, without delays.

One of its main heavy-duty construction features is the Timken® tapered roller bearings on the axles. Timken bearings keep moving parts in alignment, reduce wear on the axles and wheels and help prevent

breakdowns. They cut friction almost 100%. They reduce maintenance and in-shop time, increase car availability.

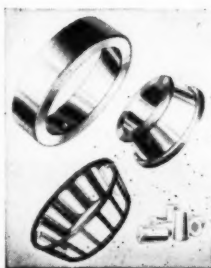
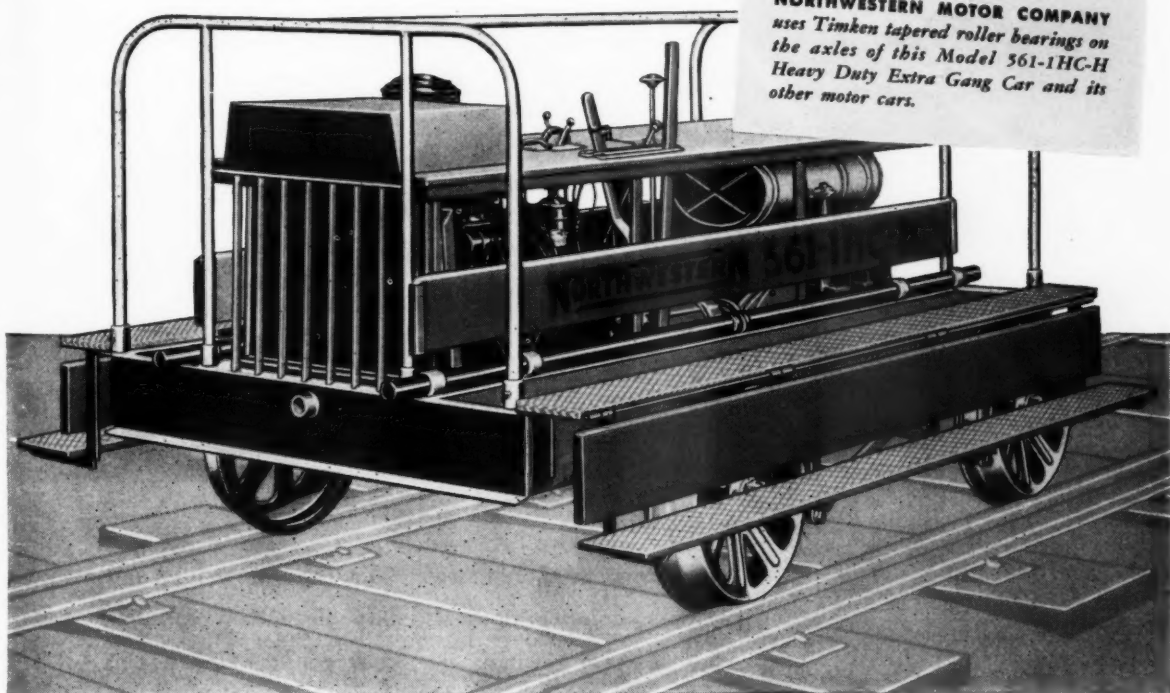
Line contact between the rolls and races of Timken bearings gives them tremendous load capacity. That goes for *all* loads—radial, thrust and combination—thanks to the tapered roller design of Timken bearings. And Timken bearings normally last the life of the machine because they are (1) engineered for the job,

(2) made of Timken fine alloy steel and (3) precision manufactured.

Bearings are an extremely important part of any machine. Make sure the machines *you* build or buy have the best. Look for the trademark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.

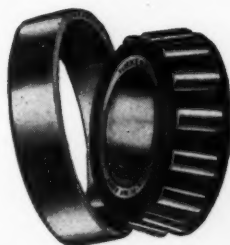


## DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roll ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

**TIMKEN**  
TRADE-MARK REG. U.S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL AND THRUST → LOADS OR ANY COMBINATION →

# COMPRESSION

## *Rail Anchors*



The economy of using continuous pressure-welded rail in tunnels, on bridges and through station platforms has been convincingly demonstrated time and again. It is significant that in these exacting applications, TWO-WAY HOLDING Compression Rail Anchors are almost invariably used.

## THE RAILS COMPANY

General Office

178 GOFFE STREET, NEW HAVEN 11, CONN.

ST. LOUIS, MO.

HOBOKEN, N. J.

CHICAGO, ILL.



*Two New  
Formulations  
of Proved  
Products*

**NEW**  
**ESTERON**  
**BRUSH**  
**KILLER**



**NEW**  
**ESTERON**  
**245**

Esteron Brush Killer and Esteron 245—thoroughly tested over miles of terrain and right-of-ways—now offer *increased* effectiveness over a *greater variety* of woody species.

**CHECK these new advantages . . .** 1. Both formulations contain a new type of low volatility ester. 2. Both new formulations contain higher percentage of active ingredients. 3. These formulations are more effective per unit of active ingredient. 4. These products are available at no increase in price.

New Esteron Brush Killer and Esteron 245 are ready to work for you with better results . . . greater effectiveness. Certain species such as maple, ash and oaks which have resisted many formulations can now be controlled with these new brush killers. Use new, improved Esteron Brush Killer and Esteron 245 for better brush control . . . greater all-around efficiency!

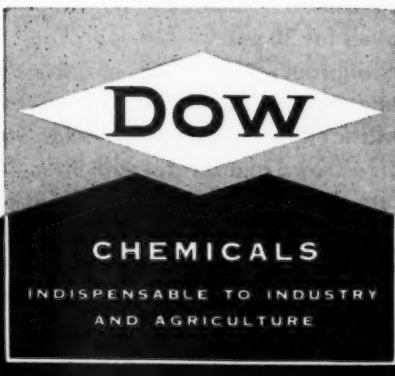
Write to Dow for complete information.

Agricultural Chemical Division

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

**USE DEPENDABLE DOW AGRICULTURAL CHEMICAL PRODUCTS**

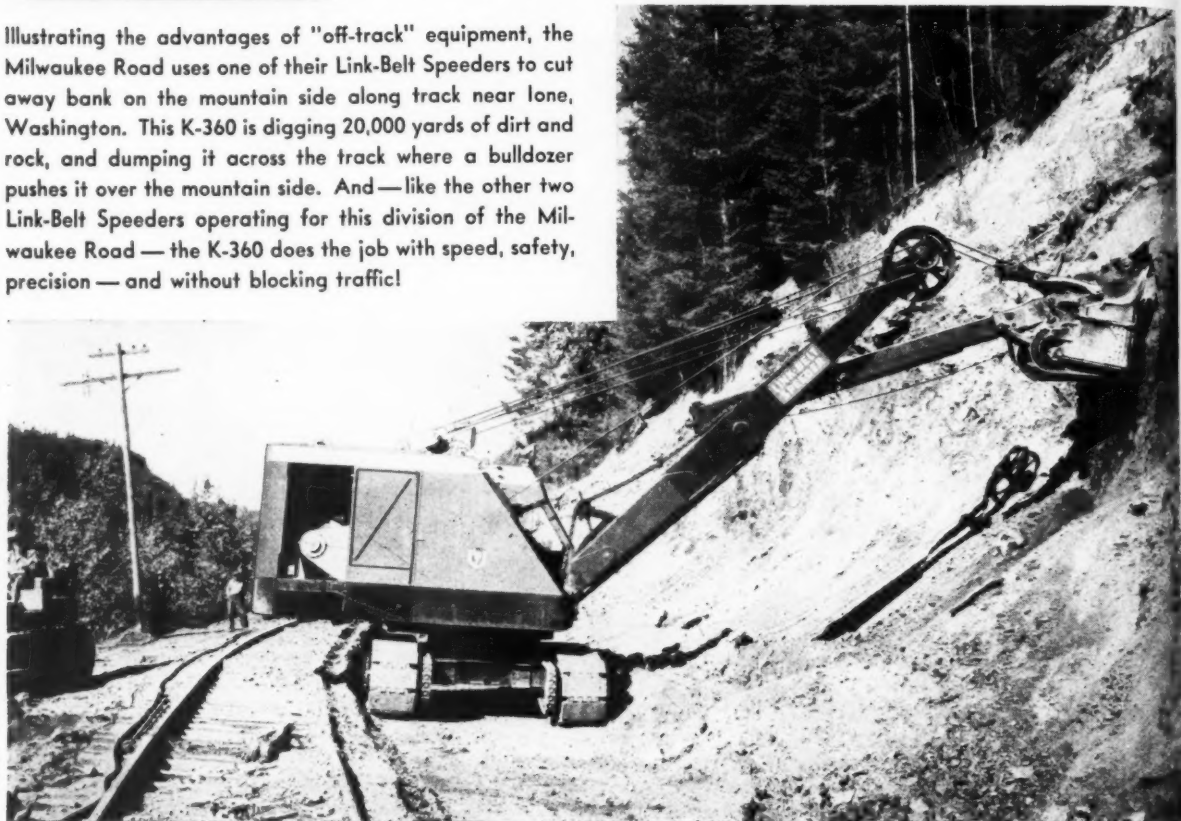
WEED AND GRASS KILLERS • INSECTICIDES • FUNGICIDES  
SEED PROTECTANT • PLANT GROWTH REGULATORS  
GRAIN AND SOIL FUMIGANTS • WOOD PRESERVATIVE



## LINK-BELT SPEEDER

# K-360 MOVES MOUNTAIN SIDE To Widen Bed for Milwaukee Road

Illustrating the advantages of "off-track" equipment, the Milwaukee Road uses one of their Link-Belt Speeders to cut away bank on the mountain side along track near Lone, Washington. This K-360 is digging 20,000 yards of dirt and rock, and dumping it across the track where a bulldozer pushes it over the mountain side. And—like the other two Link-Belt Speeders operating for this division of the Milwaukee Road—the K-360 does the job with speed, safety, precision—and without blocking traffic!



### "Really Like to Run It..." Says Operator of Speed-o-Matic K-360

"It's easy to handle and has plenty of power," says Operator R. M. Ferguson. "Best steering and traveling machine I ever saw." This from a man who's been operating shovels for 30 years—25 years for the Milwaukee Road alone! He's found out for himself how Speed-o-Matic hydraulic controls allow him to crowd and retract with little effort—to hoist, swing and dump easily—and with precision. And without fatigue, he can work at full capacity right through to the end of the shift.



Operator R. M. Ferguson at Speed-o-Matic controls of K-360 shown above.

### RIGHT FOR RAILROAD JOBS— MOBILE, VERSATILE, DEPENDABLE

Crawler or wheel-mounted, Link-Belt Speeder Shovel-Cranes can operate clear of the right-of-way—and at any distance from the rails. A versatile Link-Belt Speeder is easily converted for use as a shovel, crane, dragline, clamshell, pile driver or trench hoe. Each machine can do almost any kind of railroad maintenance, construction or materials handling job. Dependable Link-Belt Speeders can be sent out on jobs in remote areas—precision built, they operate trouble-free.

LINK-BELT SPEEDER CORPORATION  
CEDAR RAPIDS, IOWA

**LINK-BELT SPEEDER**

*"Builders of the Most Complete Line of  
SHOVELS-CRANES-DAGLINES"*

curve rail  
"life  
expectancy"

**increased tremendously!**

Records of **4 to 8** times longer life for Curve Rails are common with MECO Lubricators—and one railroad reports rail life on a curve extended nearly 15 times!

The *improved* type MBJ MECO Lubricator is giving better results than ever, *with less servicing*. One tank filling lasts 4 times longer. Lubrication passages are smoothly machined, assuring positive, uniform and accurate application of lubricant to the rails.

The *improved* type MBJ MECO can be re-applied to the new rail when track is re-laid. If the rail is of a different size, clamps to suit the new rail are required.

★ **Maintenance Equipment Company** ★

RAILWAY EXCHANGE BUILDING • CHICAGO 4, ILLINOIS

# NOW! A SUPERIOR METHOD FOR CONTROLLING RAILWAY WEEDS

—Does away with  
Expensive Hand "Clean-Ups"! →



**MODERN WEED CONTROL** programs must provide over-all efficiency and long-term economy to justify their adoption. Chemicals used today should do the entire job, for labor can no longer be wasted in hand clean-up operations that follow old-fashioned, temporary spray measures.

To get results where ordinary methods fail, investigate General Chemical "TCA"\* Formula 7B Weed Killer. This tested, consumer-approved weed killer can provide immediate results *plus* cumulative improvement . . . *at moderate cost!* Weed control with General Chemical "TCA" Formula 7B will help you:

- 1 Reduce annual work train service
- 2 Free labor for other important maintenance jobs
- 3 Reduce operating costs
- 4 Insure proper roadbed, drainage and good riding qualities
- 5 Increase safety conditions
- 6 Reduce frequency of tie renewals and track servicing

**YES, THIS MODERN** weed killer meets all requirements for improved control. It's different; it's definitely better. Here's why it gives the kind of results you want—

General Chemical  
"TCA" Formula 7B Weed Killer  
GIVES LONG-LASTING RESULTS  
*plus* LONG-RANGE ECONOMY

- ★ Kills Grasses
- ★ Kills Broad Leaf Weeds
- ★ Penetrates Entire Plant Structure for More Lasting "Kill"
- ★ Suppresses Seed Germination
- ★ Helps Preserve Track Structure
- ★ Aids in Ultimate Sterilization
- ★ Resists Leaching

GENERAL CHEMICAL  
"TCA"  
Formula 7B  
Weed Killer



For detailed information, write to:  
Weed Killer Department  
**GENERAL CHEMICAL DIVISION**  
ALLIED CHEMICAL & DYE CORPORATION  
40 Rector Street, New York 6, N. Y.

\* "TCA" is General Chemical's term denoting formulations contain the free acid of Trichloroacetic Acid only. The water soluble salts are not used in Formula 7B.



# Memorandum to: ENGINEERING AND PURCHASING OFFICERS

*Major savings in track maintenance costs are being made by many railroads that have flame-hardened open-hearth frogs and crossings.*

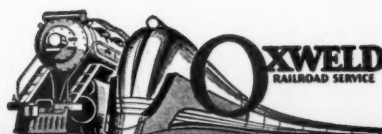
Railroad after railroad follows OXWELD's procedures in constructing simple, efficient frog flame-hardening setups. Thousands of frogs that have been flame-hardened are now in track. These treated frogs are giving far longer service than unhardened frogs—five times longer service and more. This is impressive evidence of the value of OXWELD's flame-hardening process in reducing maintenance costs on frogs and crossings.

Ask your OXWELD representative for details or write for Booklet F 7007 which gives complete information.



## THE OXWELD RAILROAD SERVICE COMPANY Unit of Union Carbide and Carbon Corporation

Carbide and Carbon Building Chicago and New York  
In Canada:  
Canadian Railroad Service Company, Limited, Toronto



SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

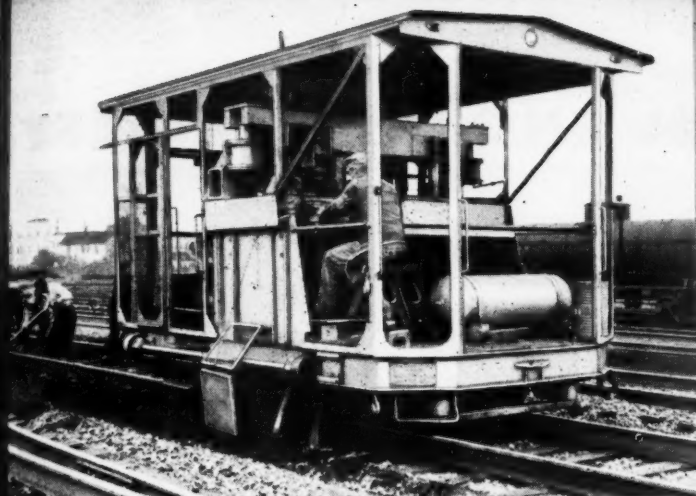
# You can give TRACK the "*full treatment*," too!

● You can do a better job *faster*. You can save *multiple* man hours. You can minimize rerouting. You can make the most of favorable working conditions . . . by giving track this up-to-date, high-production machine maintenance—the "full treatment" where necessary.

Pullman-Standard makes the machines to do the job—the Power Track Cribber, the Ballast Cleaner, and the Power Track Ballaster. Using *two* cribbers, one cleaner, and one ballaster, trailing each other in a mobile production line, a 24-man gang recently renovated a 10-mile stretch of Michigan Central track at the rate of 450 to 600 feet an hour!

Study the pictures of these capable machines, at the right. Notice the economies that they can effect. And then—read the "Important Notice" outlining the *flexible policy* under which they are now available to railroads.



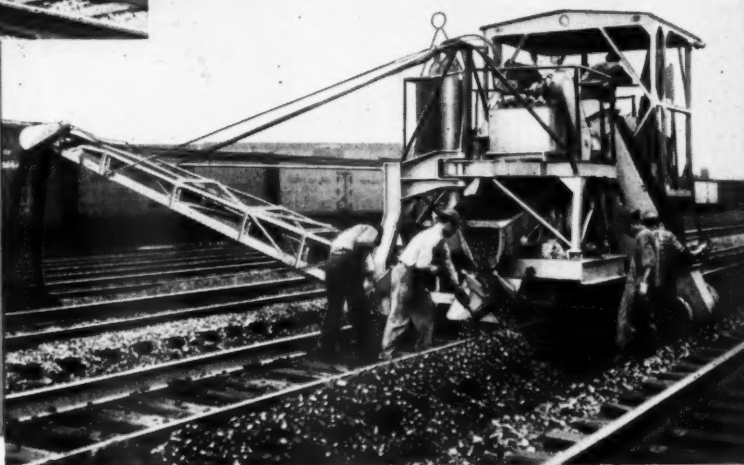


## “FULL-TREATMENT” STEP No. 1

**CRIBBING**—The Pullman-Standard Power Track Cribber can crib out from 170 to 250 feet of track per hour, depending on the ballast condition. Typical case history: hand-cribbing cost per mile, \$2,000.00; with Power Track Cribber, \$430.00; saving per mile, \$1,570.00.

## “FULL-TREATMENT” STEP No. 2

**CLEANING**—The Pullman-Standard Ballast Cleaner can clean both crib and shoulder ballast (both shoulders at once), without fouling adjacent tracks. Experience under actual service conditions indicates savings in line with those reported for the Power Track Cribber and Ballaster.



## “FULL-TREATMENT” STEP No. 3

**TAMPING**—The Pullman-Standard Power Track Ballaster can tamp approximately 500 track feet per hour, more firmly and uniformly than by any other method. Typical case history: cost per mile with power hand tools, \$1,470.00; with Power Track Ballaster, \$422.40; saving per mile, \$1,047.60.



# Pullman-Standard

CAR MANUFACTURING COMPANY

## POWER BALLASTER DIVISION

79 East Adams Street, Chicago 3, Illinois

BIRMINGHAM 3, 1004 First National Building • CLEVELAND 15, 907 Midland Building  
NEW YORK 17, 52 Vanderbilt Avenue • PITTSBURGH 19, 1115 Gulf Building  
WASHINGTON 6, D. C., 1025 Connecticut Avenue, N.W.  
SAN FRANCISCO SALES REPRESENTATIVE: MARK NOBLE

**IMPORTANT NOTICE** . . . Pullman-Standard power track maintenance machines are available to railroads in any of the following ways:

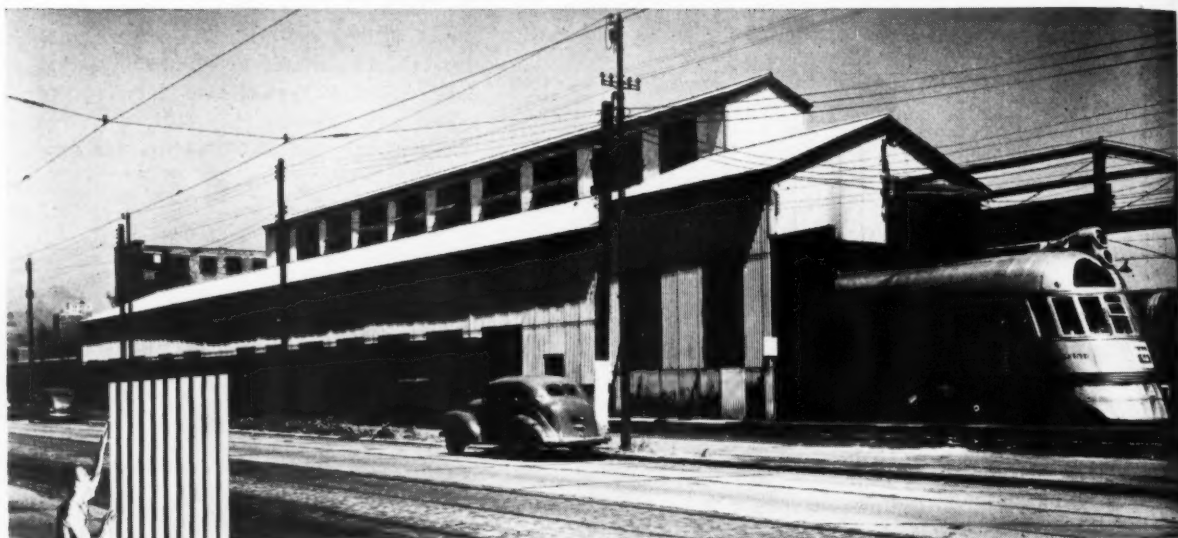
1. By outright purchase.
2. On installment terms.
3. By rental, with option to purchase.

Further information will be promptly supplied.



“TRACK AT ITS LEVEL BEST” fully describes and pictures these money-saving machines. You are invited to write for a copy of this 24-page brochure.

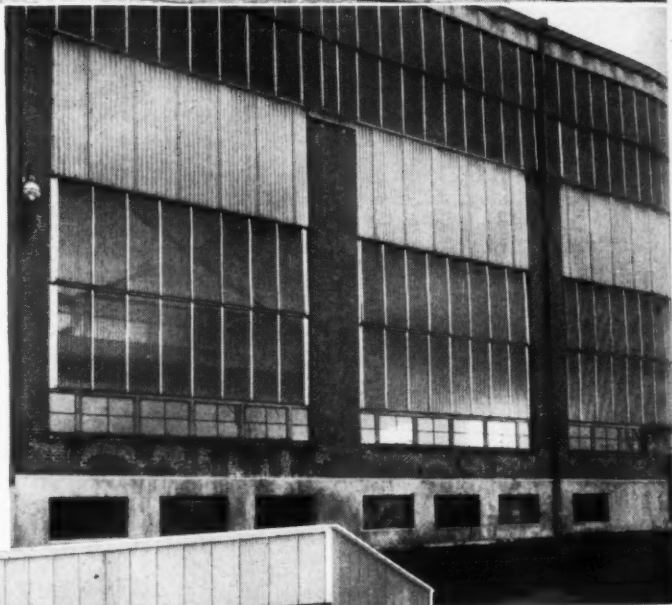
# FOR DIESEL SHOPS THAT DEFY W



**Above:** This diesel engine house is an excellent example of one type of structure for which Corrugated Transite is ideally suited. The large sheets expedite construction and provide a practically maintenance-free exterior.

**Center:** Easily applied for curtain wall construction as shown here, Corrugated Transite sheets cover large areas quickly because of their size. Note how the strength-giving corrugations are utilized as an element of design in this diesel shop.

**Bottom:** Corrugated Transite sheets were used in combination with brick to provide an unusual exterior for this diesel engine shop. Transite is adapted to practically any type of construction, may be used as either roofing or siding.



## Johns-Manville 92 YEARS



# WEATHER AND CORROSION

Build with

## Corrugated Transite

### Roofing and Siding



Here is a long-established Johns-Manville product that fills a modern railroad need—low-cost, low-maintenance housing for diesel equipment. Corrugated Transite offers a combination of advantages you'll find in few structural materials . . . and these strong

versatile sheets are ideally suited to buildings of practically any size or type.

**Tough, strong, durable**—Corrugated Transite is an asbestos-cement product of great strength, toughness and durability. It is corrugated for extra strength. Railroads have used this material for years as roofing and siding for roundhouses, car shops and similar buildings exposed to hard use.

**Needs practically no upkeep**—Corrugated Transite is rotproof, rustproof, fireproof. It never requires paint or other preservative treatment—is virtually maintenance-free! And, important in structures housing diesel equipment, it will not

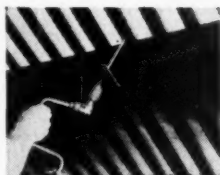
absorb oil-laden exhaust fumes which might create a fire hazard.

**Large sheets speed construction**—Corrugated Transite comes in large sheets (from 3 to 11 ft. long, 42" wide) that cover large areas quickly. The sheets are easy to cut or drill, require only a minimum of framework, are readily fastened to steel or wood.

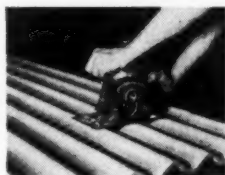
**Adaptable to many building uses**—Corrugated Transite is equally suited for roofing or siding—may be used on either new or remodeled structures. It can be used alone or in combination with other materials such as brick, glass or stone. And because of their durable characteristics, the sheets can always be *re-used* if alterations become necessary.

If you are planning new buildings to house diesel equipment, investigate the many possibilities for savings with Corrugated Transite. Write for brochure TR-45A that gives the facts about this unusual building material. Address Johns-Manville, Box 290, New York 16, N. Y. In Canada: 199 Bay Street, Toronto 1, Ontario.

\*Transite is a registered Johns-Manville trademark



Easy to bolt to steel



Easy to saw



Easy to drill



Fireproof

## OF SERVICE TO TRANSPORTATION

# The NORDBERG **POWER JACK**



The NORDBERG Power Jack is applicable for all lifts ahead of tamping machines. Here, it is working in conjunction with a Pullman-Standard Power Ballaster.

## *"Mechanical Muscles"*

### for all Raising-Reballasting Jobs

**S**PEED, accuracy, and ease of handling on or off the track are basic advantages of the Nordberg Power Jack for reballasting, general surfacing and all other operations where raising of track is involved. Lifting is accomplished by means of hydraulic rams actuated by oil under pressure. Alignment is maintained even when making heavy and high lifts. One Nordberg Power Jack easily keeps ahead of any tamping gang.

It will pay you to take advantage of the "mechanical muscles" of the Nordberg Power Jack to reduce maintenance costs.

For details, send for BULLETIN 138.

#### **SAVE \$170.00 PER MILE**

*HERE is an example of the money saving ability of Nordberg Hydraulic Power Jacks:*

On 12 selected raising jobs, all of which employed modern tamping equipment, and which were raising track at the high average of 2115 track feet per day, the Nordberg BJ Jack proved that it paid for itself in savings in only 13.8 miles . . . 34.5 working days.

*Look to*  
**NORDBERG**

... for continually improved **TRACK MAINTENANCE MACHINERY**  
to do a Better, Faster Maintenance Job at Lower Cost

**NORDBERG MFG. CO., Milwaukee 7, Wisconsin**

R 450

# 8 Big Reasons

## WHY THE HD-7 AND HD-10 ARE SO POPULAR

**1,000-HOUR LUBRICATION** of truck wheels, support rollers and idlers. You operate six months on a 40-hour week basis with just *one lubrication* . . . instead of daily, or even weekly, attention. Think what this means in labor and lubricant savings . . . and in working time gained! Think of the safety factor, too — no costly damage by greasing neglect.

**GENERAL MOTORS 2-CYCLE DIESEL ENGINE** Rugged, simple, economical, "hanging-on" power. Smooth — every down stroke a power stroke . . . less wear and tear on tractor and operator. Far less power loss than other engines at high altitudes.

**INTERCHANGEABLE ENGINE PARTS** Nearly all of the GM engine wearing parts are interchangeable with each of the GM engines on the various models of A-C tractors and motor graders — no matter the size. Lowers parts investment, simplifies maintenance for Allis-Chalmers fleet owners.

**INSTANT STARTING** GM 2-cycle diesel engines start as easily as your automobile . . . and they *start and operate on diesel fuel*. No need to let 'em idle during work-stop periods — no unnecessary engine wear or fuel waste.

**FAST MANEUVERING** 2-cycle diesel tractors are well known for their fast-working ability — not only for quickly traveling from cut to fill, but for turning around instantly in their tracks . . . and for easy maneuvering in and around tight places — especially important on bulldozing. Time saved is money made!

**PROPER BALANCE** Weight, speed and power are positively balanced in A-C tractors, assuring top performance on every job — pulling, pushing, lifting.

**OPERATOR COMFORT** All these advantages mean operator satisfaction, too — resulting in more work done more easily. Besides — he has a big, wide, comfortable seat, cushioned back, arm rests, roomy platform, convenient controls, good vision.

**MATCHED ALLIED EQUIPMENT** Each Allied manufacturer, skilled in his own field, works in complete cooperation with Allis-Chalmers in designing and building auxiliary equipment.

### MODEL

### HD-7

60.10 drawbar hp. Four speeds forward, to 5.00 m.p.h.; reverse to 1.89. Weight: 52" tread, 13,830 lbs.; 63" tread, 14,000 lbs. Available with large idler.

### MODEL

### HD-10

(shown here) 86.63 drawbar hp. Six speeds forward, to 6.03 m. p. h.; two reverse, to 4.15. Weight: 62" tread, 21,000 lbs.; 74" tread, 21,600 lbs. Available with large idler.

ASK ANY OWNER . . . OR ARRANGE FOR A DEMONSTRATION WITH YOUR ALLIS-CHALMERS DEALER . . . "SEEING IS BELIEVING"



# ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

No. 256 of a series

# *Railway* Engineering and Maintenance

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 W. MONROE STREET  
CHICAGO 3, ILL.

Subject: Our Objectives Restated

April 1, 1950

Dear Readers:

When this issue reaches you Neal Howard, who has been editor of *Railway Engineering and Maintenance* for the last 5 1/2 years, will have taken up his new duties as secretary of the A.R.E.A., leaving a void on the staff of this magazine that is not going to be easy to fill. Only those who have been closely associated with Neal in his daily work can appreciate with what great intensity and zeal he applies himself to every task, at the same time exercising a degree of judgment, tempered by broad experience and a keen sense of relative values, that almost inevitably leads him to make correct decisions. Possessed of these qualities he is certain to meet with the same success in discharging his new duties as accompanied his efforts in directing the editorial activities of this magazine.

It has now become my responsibility, which I account a great privilege, to serve you as editor of *Maintenance*. In approaching this task I am under no illusions regarding the difficulties and problems involved in attempting to fill Neal Howard's shoes. The prospects would be formidable indeed were it not for the fact that my responsibilities will be shared by a staff of four seasoned and highly capable editors. With Walter Turner ferreting out and covering developments in the eastern portion of the country, with Henry Michael handling the What's the Answer department and other assignments, and with Bob Dove and Norris Engman roving about with camera and notebook in hand—everyone of them with years of practical railroad experience and additional years of editorial training under Neal Howard to his credit—how would it be possible to regard the future with anything but a feeling of the greatest confidence?

The objective of this staff will be to continue to bring to you, between the covers of *Maintenance*, news and other timely information that we feel will be of interest and value to you in your work. This means being ever alert to uncover the new and different, to evaluate such developments in terms of your needs, and to present them to you as quickly as possible in the form of concise and readable articles, sparing no effort to do the best job humanly possible.

These requirements of successful editing and reporting have guided the efforts of this magazine in the past and they will continue to do so in the future. They are reiterated here not necessarily because we feel you need to know them but because, in restating them, we have gained a clearer, sharper conception of the task that lies before us.

Sincerely,

*Merwin H. Dick*

MHD:ag

Editor





## The last of the "Big Freeze"



Today, a leading mid-Western railroad is using a unique and economical method of preventing joint bars freezing to rail ends.

Employing oxyacetylene flame cleaning, mill scale, rust and surface moisture are effectively removed from new and relay rail ends. This, plus a special oil treatment assures a long-lasting, corrosion-resistant surface—a surface that in itself eliminates metal to metal freezing.

The operation is carried out just behind the rail laying crane. The ends of the rail within the area of the joint bars are flame cleaned with an oxyacetylene torch, equipped with a special Airco tip. After apply-

ing the flame, the rail is wire brushed and oiled with a special preservative while it is still warm. The joint bars are then positioned and bolted into place.

One torch operator and helper is able to flame clean 280 rail joints in eight hours by this method . . . at a unit cost of about 16¢ per joint.

• • • •

*For more information about flame cleaning and other cost saving methods as applied to railroad maintenance work, simply write for the 46-page booklet, "Oxyacetylene Flame Processes and Arc Welding in Railroad Maintenance Operations." Address your nearest Airco office.*

*Costs Come Down Under the Airco Plan*



# AIR REDUCTION

*Offices in all principal cities*

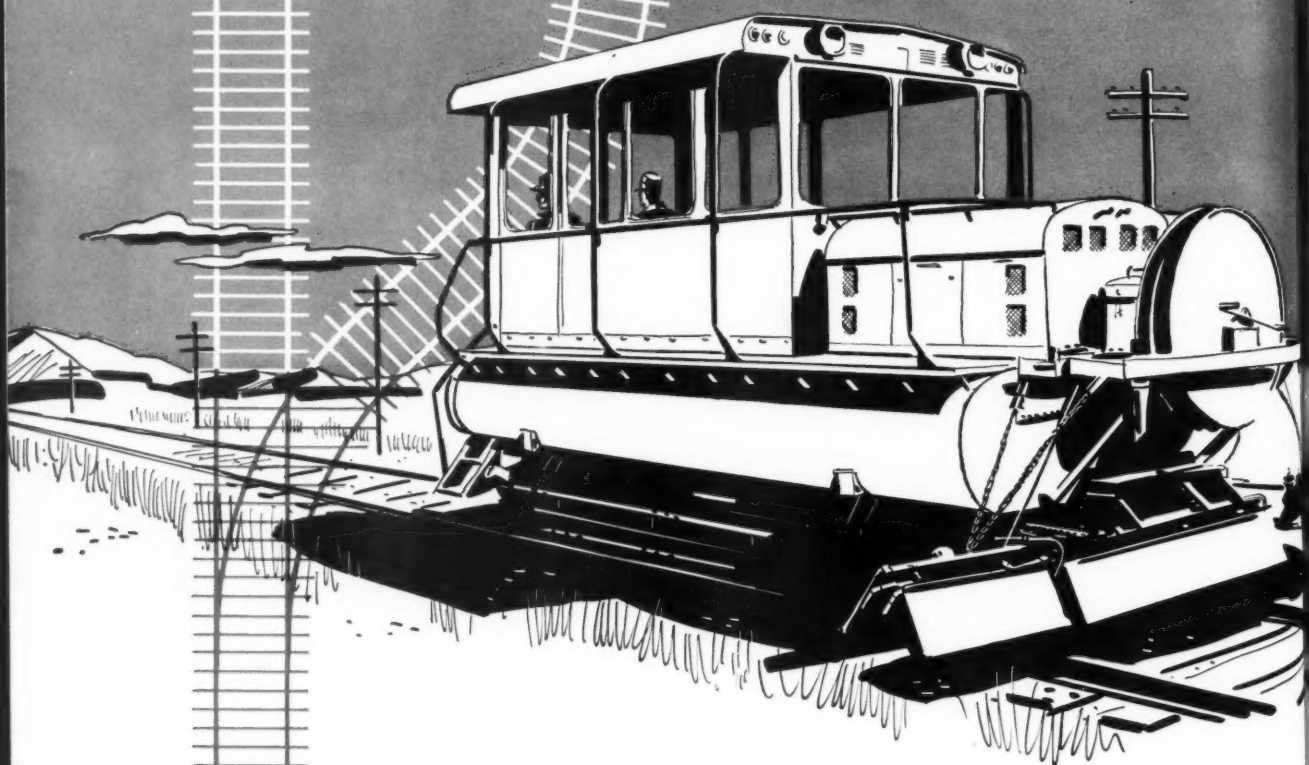
Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

# Fairmont

RAILWAY MOTOR CARS  
AND WORK EQUIPMENT

... puts experience

to work on every job



*Performance*  
ON THE JOB  
COUNTS

Durable, efficient, dependable equipment—specifically designed for the job to be done—is the basis of good railway maintenance. That's why Fairmont equipment is known and used wherever rails run. Here, for example, is a Fairmont Spray Car (W66 Series A) designed and built by men who know the job of weed control. This is a complete self-propelled, durable, safe unit. It requires a minimum crew, is rapid in operation and versatile enough to fit any job. Two sets of differently sized spray nozzles may be used—simultaneously or as individual units. A heavy-duty drive reverse gear permits 4-speed operation in either direction. A Fairmont product through and through, it is built to perform *on the job*, where performance counts!

**FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA**

# Railway Engineering and Maintenance

Published on the first day of  
each month by the

**SIMMONS-BOARDMAN  
PUBLISHING  
CORPORATION**

79 West Monroe St., Chicago 3

NEW YORK 7,  
30 Church Street

WASHINGTON, D.C., 4  
1081 National Press Bldg.

CLEVELAND 13,  
Terminal Tower

SEATTLE 1,  
1914 Minors Ave.

LOS ANGELES 13,  
816 West Fifth Ave.

DALLAS 4,  
2909 Maple Ave.

Samuel O. Dunn, *Chairman of the Board*; James G. Lyne, *President*; C. Miles Burpee, *Vice-President*; C. W. Merriken, Jr., *Vice-President*; H. H. Melville, *Vice-President*; Robert E. Thayer, *Vice-President*; H. E. McCandless, *Vice-President*; John R. Thompson, *Vice-President*; J. S. Crane, *Vice-President and Secretary*; John T. DeMott, *Treasurer*.

Subscription price in the United States and Possessions and Canada, 1 year \$2, 2 years \$3; other countries in Western Hemisphere, 1 year \$5, 2 years \$8; all other countries, 1 year \$7, 2 years \$12. Single copies, 50 cents each. Address H. E. McCandless, *Circulation Manager*, 30 Church Street, New York 7, N.Y.

Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

PRINTED IN U.S.A.

NAME REGISTERED U. S. PATENT OFFICE

VOL. 46, NO. 4

APRIL, 1950

<b>Editorials</b> .....	<b>353</b>
A Personal Fight—Rail Anchors—Expensive Labor	
<b>Spans Moved 118 Ft. to New Line in 30 Min.</b> .....	<b>355</b>
Tells how the Burlington, as part of a line-change project, shifted a double-track bridge laterally along falsework runways	
<b>How Long Should a Rail Be?</b> .....	<b>358</b>
C. B. Bronson discusses the considerations involved, and the problems presented to the mills and the railroads in any projected change	
<b>A.R.E.A. Meeting Was Well Attended</b> .....	<b>362</b>
A picture story of the interesting and profitable forty-ninth annual convention held in the Palmer House at Chicago last month	
<b>New Tie-Bundling Scheme Reduces Handling Costs</b> .....	<b>366</b>
Describes a method of banding ties into unit loads by special steel straps that also serve as slings for handling the loads with a crane	
<b>How to Make Steel Water Tanks Last Indefinitely</b> .....	<b>368</b>
Report of a subcommittee of the A.R.E.A. Committee on Water Service and Sanitation, which explains how corrosion can be prevented	
<b>N. &amp; W. "Dolls-Up" Small-Town Stations</b> .....	<b>370</b>
Highlights the remodeling and modernization work undertaken by this road at Suffolk, Christiansburg and Wytheville, Va.	
<b>What's the Answer?</b> .....	<b>373</b>
Examinations on Rules and Safety      Lighting for Railway Buildings	
Cushions for Bridge Seats      Personnel Operating Water Stations	
Frequency of Cleaning Cribs      Making Annual Switch Inspection	
The Latest in Brick-Laying Devices	
<b>Products of Manufacturers</b> .....	<b>379</b>
<b>What Our Readers Think</b> .....	<b>382</b>
<b>The Month's News</b> .....	<b>384</b>

MERWIN H. DICK  
Editor

JOHN R. THOMPSON  
Business Manager

WALTER L. TURNER, JR.  
Eastern Editor

HENRY E. MICHAEL  
Associate Editor

RADFORD E. DOVE  
Associate Editor

NORRIS V. ENGMAN  
Associate Editor

# More BARCOS will help solve the 40-hour week

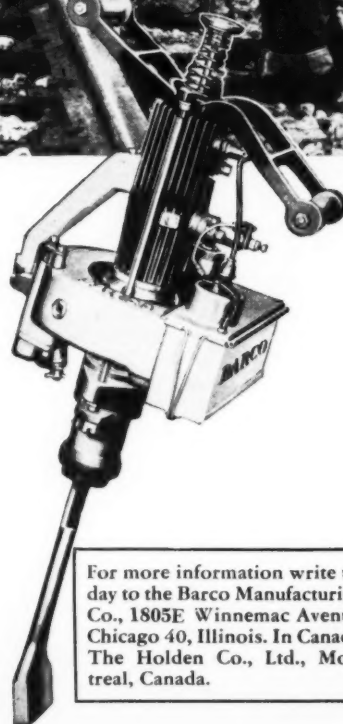


By maintaining track with less large gang work.  
BARCO has more power and will tamp more ties better.  
Will tamp cemented ballast.  
Will not tie up the tracks.  
May be used for other work when not tamping.  
No expensive equipment to be tied up for months each year.

## BARCO

### UNIT TYTAMPERS

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY



For more information write today to the Barco Manufacturing Co., 1805E Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.



## A Personal Fight —

### Why Warnings of Railway Executives Should Be Heeded

Engineering officers who attended the American Railway Engineering Association convention last month have reason to be highly satisfied with the technical information that was presented in the form of committee reports and addresses. But if they listened carefully to the messages contained in several of the non-technical addresses they have cause for a definite feeling of uneasiness regarding the trend of events affecting the economic structure of the railroads and the country as a whole.

In making the opening address at the convention Fred S. Schwinn, president of the association, likened the American way of life to a structural foundation and said that on this "wonderful foundation stands the American railroad structure." But he added that the "termites of centralized power and socialism are eating away at that foundation and gradually weakening it," and warned that the future "will not make a pretty picture unless we assert our right as individuals and take an active part in the protection of our structures."

Following Mr. Schwinn on the program, Vice-President J. H. Aydelott of the Association of American Railroads described the problems of the railroads that are caused by unfair regulation and subsidized competition, and described the efforts that the roads are making to obtain more equitable treatment. Local contacts by railroad officers, particularly those who spend a large part of their time in the field, are essential to the success of these efforts, declared Mr. Aydelott.

Speaking at the annual luncheon, W. G. Vollmer, president of the Texas & Pacific, said that false reasoning is painting a "rosy road to socialism", which is "paved with wrong assumptions and tempting promises." He told his listeners that, to counteract this dangerous trend, it is "important that you speak up, whenever and wherever you have an opportunity . . ."

Messrs. Schwinn, Aydelott and Vollmer were not speaking simply to exercise their vocal chords. Each spoke in the earnest hope that at least some of his listeners would be persuaded to enter the fray on an active basis against the ultimate enemy—state socialism. But there is not much hope that railway engineering and maintenance officers in general will feel impelled to take an active part in the battle unless and until they are convinced that they have a *personal* stake in the matter.

It is not difficult to show that such a stake exists. Any weakening of the earning power of the railroads through loss of business to subsidized agencies or for any other reason naturally poses a threat in some degree to the security of every railroad employee. If the situation should progress to the point where nationalization of the railroads becomes a reality, supervisory officers would probably not be seriously affected, at first, but it is important to remember that such a step would sooner or later be followed by more and more socialistic controls, with corresponding loss of individual liberty. When complete socialism is reached the individual is no longer master of his own fate, but is merely a pawn subject to the whims of the bureaucrats.

If railway engineering officers can only get this true picture of how the present treatment of the railroads is pushing them toward nationalization and the entire economy toward socialism, and of the evils of socialism from a personal standpoint, there would be no lack of vehemence and energy in their efforts to see that the enemies of free enterprise are stopped in their tracks.

## RAIL ANCHORS—

### *Is Their Worth Fully Appreciated?*

EVIDENCE continues to pile up year after year that some track foremen and possibly even supervisory officers do not fully appreciate the true value of rail anchorage or what constitutes adequate anchorage. Almost every year the Interstate Commerce Commission makes at least one accident report in which the "insecure condition of track" that led to the accident is attributed largely to inadequate anchorage. There are, undoubtedly, many other lesser derailments caused by the same condition.

In view of the flagrant warnings by means of which inadequate anchorage gives evidence of its presence as it approaches a hazardous condition, it is almost inconceivable that foremen and track supervisors would ever permit it to reach the point where a derailment might ensue. Why are such visible warnings as tight rail, skewed ties, kinked joints, and poor line allowed to continue without remedial measures being taken? Why, for example, would a foreman continue for several years to "cut in" short rail every summer and put back in track a longer rail in the winter to compensate for expansion and contraction, without observing that the track had only about 55 rail anchors in 60 rail lengths? If the foreman who actually did this on one road had had a full appreciation of the function and worth of rail anchors he might have prevented the serious accident that later occurred.

A track supervisor who has studied this problem has the theory that the failure of some foremen to maintain rail anchors properly may be due to the fact that the instructions generally issued in that regard are indefinite. Such instructions usually call for judgment to be exercised in determining the number of anchors to be applied, giving consideration to various conditions, such as grades and traffic. Few foremen feel qualified to exercise such judgment. They merely take the easy course and "let George do it." Consequently, even though evidence may appear soon after new rail has been laid that the rail has begun to run, the foreman may fail to apply additional anchorage or to ask for more anchors for this purpose.

As a result of a comprehensive study of rail creepage by the Track committee of the American Railway Engineering Association recommendations have been included in the association's Manual as to the number and position of rail anchors to be used. On track with traffic in one direction, these recommendations call for a minimum of eight rail anchors per 39-ft. rail, plus a pair of back-up anchors to be applied near the quarter points. Additional anchors should be used where needed. On track with traffic in both directions "the use of 16 rail anchors per 39-ft. rail length is recommended, 8 to resist movement in each direction for balanced traffic."

If foremen were given authority to adhere to these minima or, better yet, made to realize that it is as much their responsibility as that of anyone else to

see that rail anchorage is adequate, surely the I.C.C. would have little occasion to report accidents caused by "insecure track conditions" attributable in large part to inadequate rail anchorage.

## EXPENSIVE LABOR—

### *Has Created Manpower-Conscious Attitude*

NEVER have maintenance-of-way supervisory officers been so acutely conscious as they are now of the value of manpower. This is so, of course, because manpower has never been so expensive as it is now. As anything becomes more expensive it must be used with increasing care to avoid waste, and if the price continues to go up the pressure of economic necessity will force the user to become ever more conscious of the demand for economy.

The extent to which maintenance men have become manpower-conscious is illustrated by a recent incident. A track-maintenance operation was underway which involved a heavy concentration of power equipment, including some machines of recent introduction. The number of men engaged in the work was phenomenally small in proportion to the amount of work being done. In fact, the likelihood is that never before had so few men done so much work of the particular type involved on this job. Yet, during an inspection of the work by a group of the road's higher maintenance officers, the supervisor in charge was sharply criticized by some of his superiors because they felt that he was using more men than were necessary.

The criticism may or may not have been justified. The point is that, in spite of the economy in man-hours that was being realized, some of those present had become so highly conscious of the high cost of a man-hour that they were continuing to search for even further opportunities for saving labor. If not carried to extremes, this idea of never being satisfied with the progress made, no matter how great, reflects a healthy attitude. In other words, the fact that some long step forward has been made in reducing labor costs is not in itself justification for assuming that all the possibilities have been exhausted.

A few years ago when large track-maintenance operations involved swarms of men and but few machines it was difficult, if not impossible, for an observer, during a brief visit to the job, to make an on-the-spot analysis of the organization to determine if the number of men in the gang was no more than required to do the work. In these days, however, when the organization is apt to consist of a preponderance of machines and only a few men, the presence of any excess manpower is likely to stand out like a sore thumb. This fact, in itself, should be sufficient cause why the greatest of care should be exercised in organizing maintenance gangs to assure that there will be no wastage of manpower.

The westbound span of Burlington's Br. 289.20 as it was being pulled over the runways by the two tractors shown at the right. Men riding the ends of the span signaled desired movements to others stationed on the new line who, in turn, transmitted the signals to the operators of the two tractors



Aerial photos courtesy of Ottumwa (Ia.) Daily Courier

## Spans Moved 118 Ft. To New Line in 30 Min.

**As a part of a line-relocation project west of Ottumwa, Iowa, the Burlington shifted a single-span double-track girder bridge laterally from the old location to an opening prepared for it in the new line, about 118 ft. away. This was accomplished by erecting two lines of timber-pile falsework, each supporting a runway of old rails, and using tractors to roll the spans around a curve on dollies to the new opening.**

• At 8:02 a.m. one day recently a bridge crew of the Chicago, Burlington & Quincy began to jack up the east-bound 91-ft. deck plate-girder span of Br. 289.20 on its double-track main line over North Avery creek near Chillicothe, Iowa. Then, after a short trip, which required 30 min., the span was in place at a new bridge opening located about 118 ft. south and west on a new line. Five days later the westbound span was shifted in the same way.

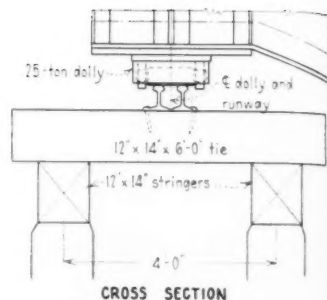
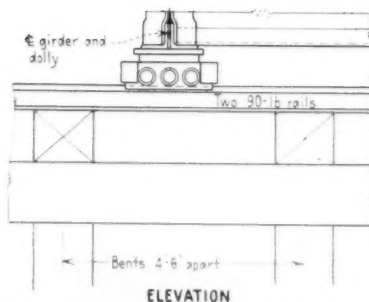
These two quick shifts of a

bridge highlighted the completion of one of several line changes that the Burlington is carrying out on its main line west of Ottumwa, Iowa, where, in 1947, the line was inundated and washed out by record floods of the Des Moines river and its tributaries. As a result of this program as a whole, costing more than \$1,250,000, curvature and grades have been reduced, permitting train speeds to be increased at least 15 m.p.h., and the line has been raised well above the reach of high water.

The particular line change on which Br. 289.20 is located involved 2.79 mi. of double-track line having five curves. The new line shortened this distance by 0.15 mi. and has only two curves, one of 54 min. and the other of 30 min. This line-change project required the shifting of two steel bridges from the old line to the new, Br. 289.20 and Br. 287.15.



These were both single-span open-deck structures with 91-ft. deck plate-girders and were located on tangent track. Br. 287.15 was shifted about 2 ft. at one end and about 5 ft. at the other to fit the new alignment on the 54-min. curve. The shifting of the spans of this structure presented no unusual problem, and the work was carried out on the existing abutments. This structure was also raised about 2 ft. 6



Above—Drawing showing details of the falsework runways. Left—The westbound span was nearing its final location as this view was taken. Superior alignment of the relocated line is clearly evident



into place by two tractors, one for each end of the structure.

The preparatory work at the new site of the bridge consisted of excavating to increase the size of the waterway area, and the construction of two reinforced concrete piers, founded on rock, and two abutments. When the concrete work had been completed and sufficiently cured, the embankment was placed behind the bank blocks. Then the new 60-ft. deck plate-girder approach spans, which have ballasted decks, were installed.

While this work was being carried out the falsework runways were being built between the bridge seats of the old bridge and those of the new piers. Also, the old shoes were removed from under the eastbound span, the first to be shifted, and blocking was substituted for them. In constructing the runways, they were projected south, at right angles to the existing bridge, for about half the distance between the existing and proposed bridge seats of the eastbound span. Here an angle of 13 deg. was introduced in the runways and they were continued on the changed alignment to join the newly-constructed piers.

#### Details of Runways

Each falsework runway consisted of uncapped two-pile bents, driven 4 ft. 6 in. apart and braced longitudinally, to which stringers were drift-bolted and overlaid with 12-in. by 14-in. by 6-ft. ties on 18-in. centers. Two 90-lb. rails were spiked side by side on the ties on each runway to serve as track for 25-ton three-roller bridge dollies. The rails were curved at the bends in the falsework for a distance of one rail-

in. to a new grade and set on pre-cast reinforced concrete raising blocks, armored to prevent spalling and cracking.

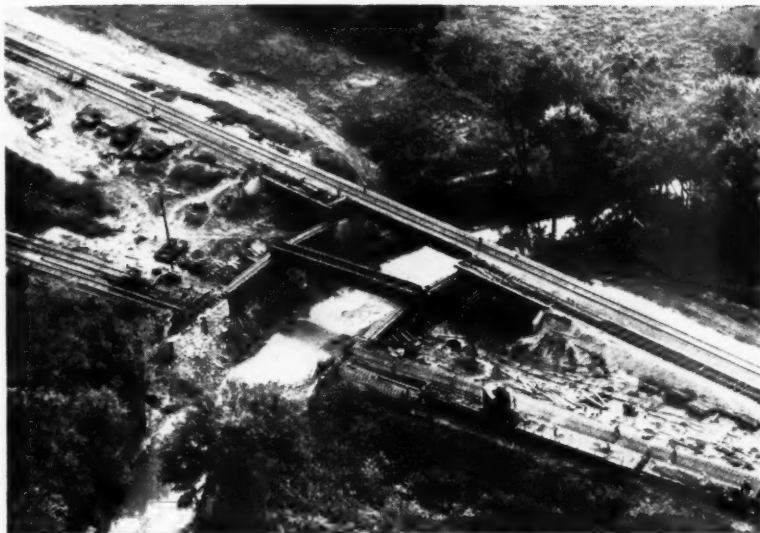
#### Br. 289.20 More Complicated

On the other hand, the relocation of Br. 289.20 presented a more complicated problem. The proposed bridge opening on the new line was about 116 ft. south and 13 ft. west of the existing bridge, and on an angle of about 13 deg. with it. The new bridge site is on a 30-min. curve, and its elevation is such that the spans had to be raised, when moved, an average of 2 ft. 7 in. The record

high water of 1947 showed the need for a larger waterway area for this bridge opening than had been provided by the original structure. Consequently, it was decided to install a 60-ft. approach span at each end of the relocated bridge.

For relocating the existing spans of this bridge consideration was first given to the use of derricks for moving them, but this idea was rejected in favor of a plan that called for the building of a falsework runway on each side of the creek to support a track on which the spans could be placed on dollies, and, by means of rigging fastened to deadmen, pulled





This view of westbound span was taken as span was negotiating a curve in runways

length on the westerly and two rail-lengths on the easterly runways. The runways were built level and with the tops of the rails at the approximate elevation which would permit the rolling of the spans into their final position at the new grade.

A set of rigging was provided for each end of the span, consisting of a tugging line fastened to a tractor and threaded through three blocks to a deadman anchor. One of the blocks was located on the south end of the new pier, another midway on the runway, and the third was located at the span end.

Before each span was shifted, the track served by the span was withdrawn from traffic and the rails and bridge ties were removed, following which the span was jacked up sufficiently to permit the runway track to be extended over the bridge seats and to insert a bridge dolly under each of the sole plates of the span. Duff-Norton 50-ton toelift bridge jacks were used for this jacking operation. The spans each weighed 70 tons and the girders forming the spans were of the "fish belly" type.

#### Movement Carefully Controlled

When all the preparations had been completed for the eastbound span it was pulled slowly along over the runways by the tractors. Its movement was controlled by men riding the span ends, who signaled desired movements to other men stationed on the new

approach spans, from where they could transmit signals to the tractor operators. When the span had traveled about half of the required distance, movement was halted to reset one pair of blocks, after which it was resumed and continued until the span reached its final position. So carefully was the span guided on the tracks that, as

rolled into final position, it was not out of position longitudinally more than  $\frac{3}{4}$  in., and the entire travel movement had taken only 30 min.

The span was then raised on bridge jacks, the dollies and the runway track over the bridge seats were removed, new castings were set, and the span was lowered on new pedestals. A creosoted timber ballasted deck was placed on the span during the following two days, and the track was laid.

A similar procedure was followed in shifting the westbound span. The completion of all work involved in the movement of each span required that one of the tracks be removed from service for a period of  $2\frac{1}{2}$  days. The work was speeded by the use of two 160-c.f.m. air compressors which supplied air for power tools for cutting out stone from the old abutments and for drilling holes in the new masonry.

The project was carried out under the general direction of H. R. Clarke, chief engineer, and the work of shifting the bridge was done by company forces under the direct supervision of the bridge engineer, the division superintendent and the master carpenter.



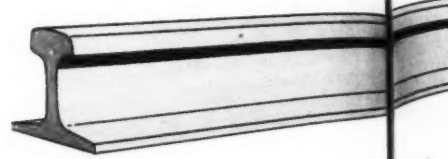
**SOMETHING NEW IN SNOW-FIGHTING EQUIPMENT**—Wm. Bros Boiler & Manufacturing Co., Minneapolis, Minn., has built jointly for the Northern Pacific, Union Pacific and Chicago, Burlington & Quincy a new rotary snow plow (shown above) of exceptionally interesting design. Instead of the conventional single rotor revolving across the track, the plow is equipped with two independently-operated sets of eight-blade, impeller-type rotors, one set above the other, which revolve in line with the track. The rotors direct snow into two vertical chutes with deflector hoods which may be turned to throw snow at any desired angle on either side of the plow. Each set of rotors is preceded by three-blade rakes designed to break up the snow and feed it to the rotors. The plow is powered by a 1,080-hp. Diesel engine. Since the snow is broken up ahead of the plow, relatively low pushing power is necessary. In fact a 1,000-hp. Diesel switcher is reported to be adequate under most conditions.



By **C. B. BRONSON**

Maintenance of Way Assistant to  
Vice-President, New York  
Central System

# How Long Should a



• It is highly appropriate to turn our attention again most seriously to the important question of how long a rail should be. With the five-day week and the higher hourly rates now firmly established, it is imperative that every conceivable avenue be explored to effect savings and to stretch the maintenance-of-way dollar to the fullest extent.

Account 220—Track Laying and Surfacing—is responsible for approximately 25 per cent of the total maintenance-of-way budget. Approximately one-half of this goes into the maintenance of joints. There is no denying that rail joints constitute the weaker links in the track superstructure. Dimensional limitations of the fishing areas restrict the mechanical strength of the joint bars, reduce the carrying capacity of the track, and, in time, interrupt the continuous transmission of wheel loads from one rail to the next.

Joint bars have been designed with utmost skill in the utilization of metal, and research, scientific study and practical field measurements have been pursued aggressively to strengthen the joint. But the weakness is basic, and unfortunately cumulative. However, in spite of this weakness, bolted joint construction has rendered a splendid account of itself, for there are literally thousands of miles of smooth-riding bolted track, excellent in both appearance and general alinement. The time has now arrived, however, when the present length of rail must be reconsidered, to offset the tre-

mendous added expenditures resulting from factors beyond our control, if the track structure is to be maintained to the high standard necessary to carry present-day loads at the high speeds now universally demanded.

## Why Multiple of Three Feet?

In discussing the most desirable length of rail, two distinct possibilities immediately arise—

(1) The trackman's ideal, consisting of long stretches of jointless rail.

(2) Rail longer than the present 39-ft. standard length.

Turning back the pages of history to trace the changes in standard rail lengths for the last one-half century or more, it is logical to ask why the various lengths were selected. If one searches the record, he will find little, if anything, to furnish a ready answer. Prior to the turn of the century the 30-ft. rail was in more or less universal use on the railroads in this country. In 1901 it was advanced to 33 ft. In 1925 this length moved forward another notch to 39 ft., and here it has remained fixed throughout the last quarter of a century. In no case was theoretical or scientific consideration given to what the length should be, the length selected being based principally, if not solely, on the available supply of cars of sufficient inside length to accommodate the rails.

Curiously enough the length chosen in each instance is a multiple of one yard. Could this in any way be linked with the fact that rail sections have invariably been designated on the basis of weight per yard? Perhaps it was a coincidence, but it is significant that for all rail lengths mentioned beyond 39 ft., the multiple of one yard still holds.

The following quotation from

the records of the A.R.E.A.—Volume 26, 1925, on the standardization of the 39-ft. rail, is of interest.

## Desirable Length of Rails

The (Rail) committee has included in the rail specifications a standard rail length of 39 ft., and many contracts for rail have been executed this year stipulating a 39-ft. length without entailing price penalty by the manufacturers.

The committee recognizes that the 45-ft. length is the most economical and most desirable, but present average car lengths do not permit of ready transportation, and mill facilities are not yet afforded for their manufacture. The committee presents its confident belief that rail mills in remodeling may provide facilities for the production of 45-ft. lengths.

The two important points here are that a price penalty in effect for rails longer than 33 ft. was eventually waived, and that the remodeling of the mills for the production of 45-ft. rails was contemplated.

## Other Early Studies

The demand for increasing the standard rail length did not remain dormant for any appreciable length of time, for a canvass was initiated by the Rail committee, A.R.E.A., in the middle Thirties, culminating in a report in 1938. This report included a detailed analysis of the economics of rails longer than 39 ft., directed intentionally to those of 45 and 78 ft., and a summary relative to preference in length. About one-quarter of the mileage represented by the reporting roads favored a 78-ft. length. There was a diversity of preferences ranging from no change to several which indicated lengths between 39 and 78 ft. Some roads expressed no opinion whatever. This situation prevented the rail manufacturers from proceeding with engineering studies as to necessary changes

This article is an abstract of an address presented before a recent meeting of the Maintenance of Way Club of Chicago.

# Old a Rail Be



39 ft.?

45 ft.?

78 ft.?

in their plant facilities, for nothing could be done without definite recommendations as to the standard length which would be more or less universally acceptable.

A new canvass of the railroads in the country is now actively in process, and the roads are being requested to express their views on the acceptance of the 78-ft. length.

## Why Single Out 78 Ft. Length?

One might inquire as to why a 78-ft. length is singled out for consideration, or the question might be asked as to why a 45, 60 or 66-ft. length was not chosen. It stands to reason that, as compared with a 78-ft. length, only partial benefit is attained from a 45-ft. length in eliminating or reducing joints, and that to adopt the shorter length would merely be creeping up just one more notch as we did before. A survey of the registry indicates that the supply of cars of suitable inside length to handle 78-ft. rails would not present too much of a problem.

A jump to 60 or 66 ft. leads immediately to double loading, and also necessitates a decided re-vamping of mill facilities. By the process of deduction, the 78-ft. length is arrived at, eliminating half of the joints and effecting a greater saving in Account 220. There is an added advantage in the 78-ft. length in that it is a direct multiple of the present standard 39-ft. length, with which the principal main lines are now laid. Mill problems would be essentially the same whether the length is 60, 66 or 78 ft.

It is understood that many railway engineering officers favor the 78-ft. standard, although one important and qualifying stipulation is as to how much the added cost will be. This cannot be determined until the mills have made

a thorough engineering study of the cost of converting their facilities, and of related incidentals, to furnish the increased length.

## Mill Practices

It is recognized that the rail mills will have various reasons why production of the longer rail will present a difficult problem. However, this is not an entirely new or untried proposition for them. For example, girder rails weighing up to 159 lb. per yard are rolled and shipped in lengths of 60-62 ft. as standard practice. Sizeable tonnages of Tee rails have been made for some roads in lengths of 60, 66 and 78 ft., although, it is admitted, under far from ideal conditions, due principally to the fact that the mill finishing end is laid out for the handling of 39-ft. lengths.

For those unfamiliar with rail mill operations, the finished lengths of the rail bars before hot sawing are 78 ft. or 117 ft. at every rail mill in the country. Available information shows that, at least in some countries in Europe, rails are rolled 18 to 25 meters long. Certainly ingenuity in this country can duplicate what the continental mills are furnishing.

## Mill Problems

Without in the least attempting to intrude upon the prerogatives of the rail manufacturers, it seems only fair in a discussion of this subject to take a laymen's-eye view of what the mills will be up against to furnish 78-ft. rails. The problems of the different mills vary in a number of particulars, due to plant layout, equipment and facilities, so their manufacturing problems should be discussed only in generic terms.

Taking the 132-lb. RE section as a basis, the ingots are designed to produce five, six or more rails of 39-ft. length. Ingot size and height will need to be considered.

**With the question of rail length again prominently in the minds of railway engineering and maintenance officers as they seek new ways of effecting economies, the discussion contained in this article relative to the many considerations involved, and the problems presented to the rail manufacturers and the railroads in any projected change, is both timely and valuable.**

If it is necessary to change the cross section and height of ingots, the capacity of the soaking pits is involved. Such changes appear unnecessary at some plants. If blooms are shortened to roll one 78-ft. length, instead of 117 ft. as at present (sufficient for three 39-ft. rails), reheating furnace capacity is affected. Some structural changes would be necessary for the hot beds, although, in general, there is at present ample capacity since the rails now remain on the hot beds for only a limited time before they are removed to the control-cooling containers.

## Other Considerations

The containers would have to be completely rebuilt at practically all the plants, along with structural changes and rearrangements in the finishing department for the straightening, drilling and inspecting operations. Rail straightening presents the most serious hurdle, as experience has shown. The handling of rails into the containers and the final loading into cars would also require changes in practice. Double loading will be the only means available for shipment of the rails.

Among other incidental problems is the one of what to do about the "A" rail classification. One method suggested is to consider the first, or top, 78-ft. rail of the ingot as such, and to classify the other rails of the ingot as at present. Additional top discard





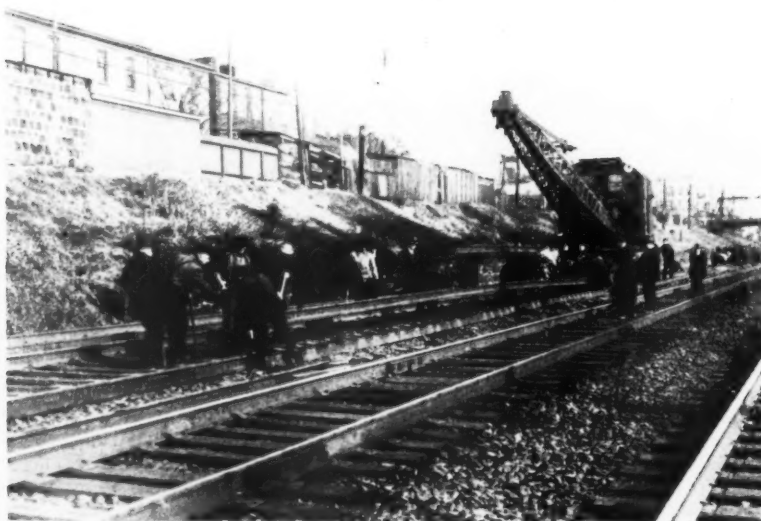
would then not appear to be necessary. Permissible variations from standard length would be increased, and probably the percentage of short-length and second-quality rails, as well as the number of odd lengths of shorts. If some roads desired rails to be rolled in lengths less than 78 ft., the mills should be able to furnish them in much the same manner as they now furnish lengths less than 39 ft.

### Problems of Railroads

From the standpoint of the railroads the problem of handling 78-ft. rails centers around the methods of unloading them from cars and installing them in track, including the types and capacity of unloaders and cranes to be used. Several roads have already accumulated experience in this respect on a limited basis, which furnishes reassurance that the job can be done.

The assembly of rails and fastenings should follow present general practices with minor exceptions. The expansion allowance will have to be practically doubled, although some roads are now using a smaller amount for 39-ft. rails than the table specifies. Rail-end batter is a major problem, but can be offset to a considerable extent by end harden-

Left—Entirely practical methods have been worked out for hauling, unloading and installing long strings of welded rail. Below—Several roads have accumulated experience in handling 78-ft. rails on a limited basis, which furnishes assurance that the job can be done



ing, for experience has already proved this to be effective for 39-ft. rails.

With 78-ft. rails, the expense of joint maintenance will be cut practically in half.

As to other details, more care will be required in stripping or skeletonizing track, especially in hot weather. The replacement of 78-ft. rails on account of failure or other causes would present an important problem, but this could be solved by installing two 39-ft. rails. A principal difficulty would arise as the result of the small size of many section gangs. However, even the present 39-ft. rail requires the bunching of gangs to take care of replacements.

The economics of the 78-ft. rail must be carefully and fully considered along the lines suggested in the A.R.E.A. Rail committee's report of 1938, adjusted to present-day prices and costs.

### Why Not Welded Rail?

One natural and obvious question that might be raised is, why spend time considering the standard length of rail when a method is available to eliminate practically all joints—namely, continuous welded rail? This is a fair question, but regardless of the attractiveness of this method, it seems certain that jointed construction will continue to be with us for a long time. Several welding processes for joining rails have been developed, but the bulk of this work is now done by the oxyacetylene pressure, butt-welding process. Accordingly, the following remarks will deal primarily with this process.

The technique of pressure welding has been skillfully and painstakingly devised on an entirely practical basis, and, as the result of intensive research and development, the strength of the welds approximates that of the rail steel itself. The novel methods of handling long strings of rails, both in loading and unloading, have been so well covered in published articles as to need only passing mention. Complete descriptions have been written by such able men as the late George E. Boyd of *Railway Engineering and Maintenance*, and P. O. Ferris, assistant general manager and chief engineer, Delaware & Hudson, and published in both *Railway Age* and *Railway Engineering and Maintenance*. These ar-



ticles are highly recommended for re-reading

Looking at the picture broadly, it is apparent that many railroads have followed a consistent policy of first installing continuous welded rail in special locations, where rail or track maintenance is particularly costly, such as in tunnels, on bridges, over soft spots in track, over water pans, and through stations. However, there are other cases where several miles of continuous welded rail have been installed out-of-face. The "sky" might be the limit in the length of such rail if it were not for the practical limitations imposed by such things as insulated joints, turnouts and crossings. There are instances of pressure-welded rails 4400 ft. long, with no intervening hand welds. In other instances there are rails one or more miles in length, although in such cases several strings of pressure-welded rails were joined together in the field by hand welding. The length chosen for pressure butt-welded rail must be based largely on practical considerations, of which handling technique is one of the most important. Whether 20, 30, 40 or more rails are to be joined in a continuous string, the procedure is about the same.

### Limiting Considerations

The field of continuous pressure butt-welded rails is being constantly expanded, although some feel that this progress is not rapid enough. Track engineers should not be criticized for proceeding cautiously in the adoption of this practice, as there are many angles to consider carefully and seriously. For example, rails are hot sawed at the mills into single lengths in a jiffy, while minutes are consumed in welding them together, limiting the number of welds that can be made per day. Even if one considers 25, 30 or 40 welds per 8-hr. day as the basis, a relatively long time is involved in making enough welds for a mile of track.

In our experience, with a well-organized plant and plenty of space for maneuvering, an average of about 25 welds per day seems to be the limit, although on individual days this figure was exceeded. Methods may probably be worked out to expedite the welding and handling procedure, and result in an ultimate increase in the number of welds per day.

Novel and interesting methods have been developed for handling these strings of rails from the plant to the site, as well as for installing them, but they still present a formidable problem for large-scale rail laying.

The cost per weld could be debated, as this has varied widely under different circumstances. Much depends upon the plant layout and what charges are included in arriving at the total cost.

Consideration of the temperature range within which welded rails can be installed is highly essential, because there is considerable restriction in this respect. Anchorage presents no unusual problem. Indeed, it is amazing to note the small amount of rail movement due to temperature changes, a fact that has been confirmed by several field studies and other research.

### Raising Track

One point which causes a lot of deep thinking on the part of trackmen when considering continuous welded rail is the question of how and when to raise track to avoid buckling or distortion. Again, engineers visualize the many welding plants that would be necessary to keep anywhere near in step with large rail-laying programs. A number of plant would have to be set up at scattered points, and the welding would have to be virtually on a year-around basis. The long rails would have to be moved considerable distances in many instances, and might have to be strung out along the right-of-way for possibly several months before they could be installed at a favorable temperature. On roads with a limited or highly concentrated mileage, this would probably not present too great a problem, but the picture would be considerably different on roads of extensive mileage, where several gangs, under present practice, are simultaneously engaged in rail laying.

### Failures Few

Reliable information has been submitted which indicates a large reduction in man-hours for the maintenance of continuous welded rail, compared to jointed track. This is a strong incentive for the railroads to consider seriously expanding their programs of continuous welded rail, especially in

view of the large expenditures necessary to maintain present standard track.

Published data have shown beyond doubt that failures in pressure rail welds have been exceedingly small. Many thousands of such welds are in service, with literally only a handful of failures, not considering the failures in welds of the earlier types before the process was so highly perfected.

Some have indicated that much might be gained by studying the experience of other countries where rail welding is on an extensive scale. While nothing should be overlooked, why is it necessary to go afar to get the answers, especially with so many varieties of installations already in this country? Furthermore, there is a wide difference in our operating practices, loads, speeds, and a number of other conditions, compared with those prevailing in other countries, which would have a bearing on the true answer to the problem.

### Can Conquer Problem

In the final analysis, whether 78-ft. rails or continuous welded rails are considered, both call for departures in methods and procedures for all concerned, whether in the rail mills, welding plants, or in the field. But American skill, ingenuity and "know how" should be equal to the task, and we should be able to conquer all of the problems encountered as equally difficult problems have been conquered in so many other cases in the past.

Mass production is the order of the day, and the handling of longer rails falls right into step with this trend of the times. Heavier and ingenious machinery have been devised for a variety of types of maintenance-of-way work, and great credit is due to the suppliers whose unceasing efforts have produced machines of high intrinsic value for accomplishing large-scale maintenance-of-way jobs both economically and efficiently.

What is to prevent us from moving one step farther ahead then when it comes to longer rails? The incentive is there. The possibility of effecting large savings cannot and must not be overlooked, especially in view of the necessity of economizing in every conceivable way.

# A. R. E. A. Convention Was Well Attended

Large group gathered at Chicago last month to take part in the forty-ninth annual meeting. Committee reports were supplemented by many timely addresses

## Convention Pictures

One of the advantages of attendance at the A.R.E.A. convention is the opportunity it affords for renewing old acquaintances, making new ones and "talking shop". The candid pictures shown on these and the following pages are ample evidence that this opportunity is not neglected.



F. S. Schwinn, president of the A.R.E.A.

• A total of 1697 members and guests of the American Railway Engineering Association congregated at the Palmer House, Chicago, last month to participate in the forty-ninth annual convention of the association. Of this total, 1025 were members of the association and 672 were guests. While the total was somewhat below the record registration of 2124 members and guests at the Golden Anniversary convention in 1949, it was considerably above any other recent year.

The principal business transacted at the meeting consisted of the presentation and consideration of the reports of the association's 21 standing committees, which this year reported on about 110 individual subjects. Many of the reports involved recommendations regarding Manual material. In addition to the usual reports on assigned subjects, a considerable number of the committee presentations were supplemented by one or more addresses on timely subjects pertaining to the work of the committees. A number of non-technical addresses were also pre-

sented, including one by J. H. Aydelott, vice-president, Operations and Maintenance department, Association of American Railroads, and another, delivered at the annual luncheon, by W. G. Vollmer, president, Texas & Pacific.

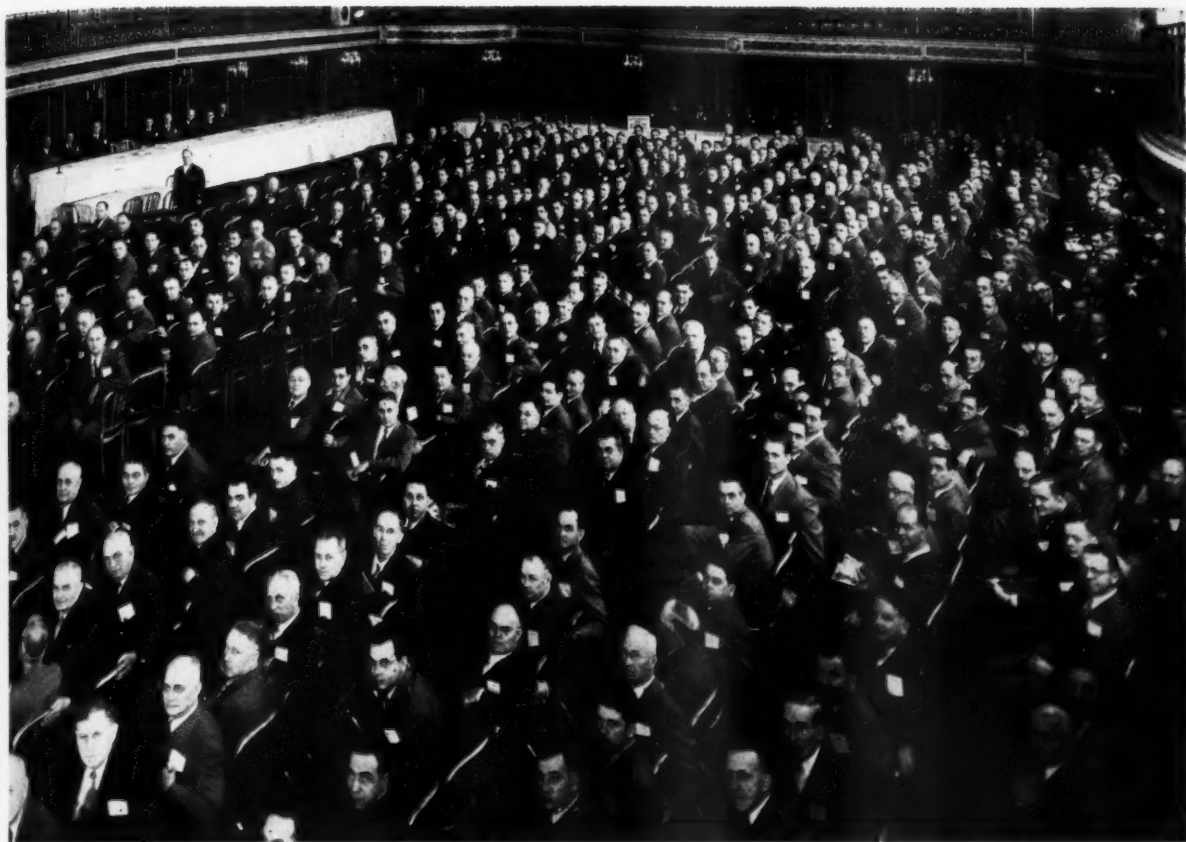
Interest was added to the proceedings by a number of extra-curricular activities or events. One of these was the presentation of an honorary membership in the association to E. M. Hastings, chief engineer of the Richmond,



T. A. Blair (A. T. & S. F.), R. Ferguson, E. J. Ruble, G. M. Magee (all A. A. R.)



A. G. Reese, H. A. Lind (both C. B. & Q.), W. E. Gardner (Wab.), R. J. Gammie (T. & P.)



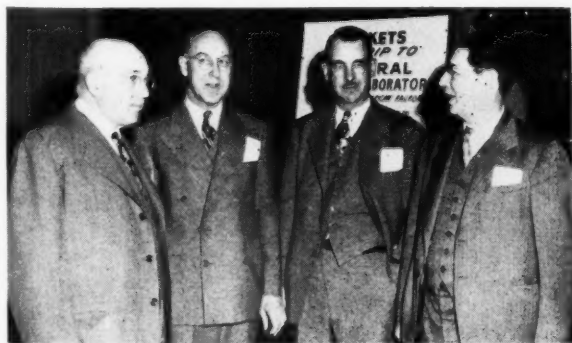
In Grand Ballroom of the Palmer House during the opening session on March 14

Fredericksburg & Potomac, and a past president of the association. The presentation was made by H. R. Clarke, chief engineer, Burlington Lines. In the absence of Mr. Hastings, who was prevented by illness from being present, the honorary membership was accepted on his behalf by two sons, both members of the A.R.E.A.—D. C. Hastings, supervisor of track, R. F. & P., and E. M. Hastings, Jr., wire crossing engineer, Chesapeake & Ohio.

Another unusual feature was an

inspection trip, in which about 350 of those present took part, to the new \$600,000 central research laboratory of the Association of American Railroads. The group was transported to the site of the laboratory on the campus of the Illinois Institute of Technology in a special train provided by the New York Central. Research Engineer G. M. Magee and members of his staff were present to answer questions and to explain the various units of equipment that have been installed.

All sessions of the convention were presided over by President Fred S. Schwinn, (assistant chief engineer, Missouri Pacific Lines, Houston, Tex.) assisted by secretary Walter S. Lacher, Vice-President H. S. Loeffler (assistant chief engineer, Great Northern, St. Paul, Minn.), and several past presidents, acting in the absence of Senior Vice-President George L. Sitton, (assistant chief engineer, Southern System, Washington,



A. H. Deno (C. & N. W.), A. H. Harris (C. & N. W.), S. H. Shepley (E. J. & E.), E. S. Birkenwald (Sou.)



R. Ferguson of A. A. R. (back to camera) explaining equipment to group who took part in inspection of A.A.R. laboratory



J. F. Schnell, H. M. Shepard, W. O. Boessneck (all Erie)



C. E. Haight (D.&H.), H. T. Wvly (Purdue Univ.),  
L. R. Deavers (M-K-T)



E. L. Gosnell (Reading), J. R. E. Hiltz, S. K. Mills, A. C. Clark, E. E. Phipps,  
G. Spath (all B. & O.)



W. H. Giles, R. H. Carpenter, R. P. Hart, G. L. Brown (all M. P.),  
W. J. Savage (T. & P.)



G. E. Detzel (G. E. Detzel Co.), S. H. Barnhart (N. & W.),  
E. H. Barnhart, H. H. Harsh, O. G. Wilbur (all B. & O.)



H. J. Weccheider, A. K. Frost, C. K. Scott, R. L. Dyke,  
L. H. Jentoft (all Erie)



C. W. Martin (N. Y.C. & St. L.), W. L. McDaniel (Massey  
Concrete Products), T. M. von Sprecken (Sou.)



C. P. Benning (Fairmont Railway Motors), W. S. Broome  
(C. & S.) W. H. Bogle (Burl.-R. I.)

D. C.), who was unable to attend the meeting because of illness.

The following officers were elected to direct the affairs of the association during the ensuing year: President, Mr. Sitton; vice-president to serve for two years, T. A. Blair, chief engineer, Atchison, Topeka & Santa Fe System, Chicago.

The directors named were R. P. Hart, chief engineer, Missouri Pacific, St. Louis, Mo.; Clark Hungerford, president, St. Louis-San Francisco, St. Louis; W. J. Hedley, assistant chief engineer, Wabash, St. Louis; and G. M. O'Rourke, assistant engineer maintenance of way, Illinois Central, Chicago.

Members of the nominating committee are: L. L. Adams, assistant chief engineer, Louisville & Nashville, Louisville, Ky.; Barton Wheelwright, chief engineer, operating, Canadian National, Montreal, Que.; E. E. Oviatt, chief





W. H. Shoemaker, D. C. Hastings, J. A. Blalock (all R.F. & P.)



R. E. Cramer (Univ. of Ill.), J. R. Trimble (T. C. I. & R. R.), R. P. Winton (N. & W.), J. H. Clark (T. C. I. & R. R.)

engineer, New York, New Haven & Hartford, New Haven, Conn.; M. H. Dick, editor, *Railway Engineering and Maintenance*; and J. E. Fanning, assistant to chief engineer, Illinois Central, Chicago.

In addition, Mr. Loeffler was automatically advanced to senior vice-president.

As previously announced, Mr. Lacher has retired as secretary of the association, effective April 1, and has been succeeded by Neal D. Howard, who resigned as editor of *Railway Engineering and Maintenance* to accept that position. At a meeting of the A.R.E.A. Board of Direction, held immediately prior to the convention, G. W. Miller, assistant engineer maintenance of way of the Canadian Pacific, Eastern region, Toronto, Ont., was re-elected a member of the board to fill out the term of Mr. Howard.



W. C. Whitham, H. C. Minter, R. F. Spars, B. E. Daniels, M. L. Bardill, N. O. Geuder, H. G. Johnson, K. L. Clark, R. G. Simmons, I. C. Brewer (all C. M. St. P. & P.)



R. A. Van Ness, H. E. Wilson, J. R. Rushmer (all A. T. & S. F.), W. Y. Ware (G. C. & S. F.), W. E. Axcell, W. E. Robey, R. H. Beeder, C. H. Sandberg, G. M. Strachan, R. L. McDaniel, W. F. Martens, W. R. Wilson, J. H. Walter, C. W. Bothe, (all A. T. & S. F.)



S. E. Tracy (C.B.&Q.), C. E. Morgan (C.M.St. P.&P.)



R. E. Patterson (L. V.), W. E. Campbell (Oxweld R. R. Serv.) as seen on inspection of rail welding job on C.S.S.&S.B.



B. J. Richards, C. E. Webb, T. M. von Sprecken, Jr., J. S. Wearn, L. C. Crissinger, E. S. Birkenwald, J. B. Akers, A. H. Exon, J. R. Derieux, Jr., (all Sou.), C. W. Ashby, (K. & I. T.) R. L. Fox, R. K. Seals, J. H. Sawyer, Jr., D. O. Willis, W. H. McNairy, H. L. Rose, E. Bennett, (all Sou.) C. E. McCarty, (R. F. & P.), H. B. Fraher, C. R. Gates, C. M. Rutledge, R. F. Bishop, W. F. Dunn, Sr. (all Sou.)



A strapped tram load of treated crossties being handled as a unit by use of a single spreader-lift attached to the crane hook

## New Tie-Bundling Scheme Reduces H

**Introduces a method of banding ties into unit loads by special steel straps that also serve as slings for handling bundles with a crane**

• As the result of intensive experimentation and tests, the Brainard Steel Company, Warren, Ohio, has perfected a new method of handling crossties in wrapped packages which, while adding only about four cents to the cost of a tie, is reported to reduce tie unloading and distributing costs by more than 30 per cent. The key to this method is the banding of tram loads of ties at treating plants, after treatment, with special heavy-duty strapping and seals in such a way that the bands not only contain the ties in a bundle but also serve as slings while loading or unloading the bundle with a crane. Handling the bundles with a crane is accomplished with the aid of lifting devices developed especially for this purpose.

### Two Banding Methods Devised

Since unloading practices differ on the railroads, two different methods of banding have been devised, one to permit unloading the banded bundles as units and the other to permit ties to be distributed individually along the track. Correspondingly, two different types of lifting devices have been developed.

In the first method of banding, the straps are applied to a tram load of ties, one strap around each end of the load, with only enough slack in the straps to permit the load to flatten out when placed in a car. The loading or unloading of this type of bundle is accomplished by the use of a single spreader-lift attached to the crane hook, that is, a spreader-lift with a single lifting hook for each strap. With this device the lifting force is applied equally to the two bands by specially-designed roller hooks which prevent kinking of the steel strapping. The single spreader-lift consists of two lengths of chain suspended from a ring with their lower ends spread apart by a length of steel pipe. The roller hooks, in turn, are suspended by shorter lengths of chain from the spreader pipe, one at each end of the pipe.

The second method of banding differs from the first only in that more slack is provided in the bands. This type of bundle may be loaded into cars at the treating plant by a single spreader-lift in the same way as the more tightly-banded bundles. For unloading this type of bundle, however, a double spreader-lift has been developed which suspends the load by four roller hooks, two attached to each band. This type of suspension, coupled with the excess slack in the bands, prevents the ties from binding and permits removing individual ties from the bundles. The double spreader-lift consists of a length of pipe from each end of which is suspended at right angles a single

spreader pipe. Each of the latter pipes is equipped with two roller hooks, and each telescopes to permit variations in the amount of spread.

### Distributing Single Ties

For distributing ties along the track the manufacturer recommends stationing a man with a long pike pole on a catwalk fastened to the side of the car to be unloaded. Then while the crane with a double spreader-lift holds a load of ties alongside the car just clear of the ground, the man can pull ties off the load, one by one, at the desired locations, as the car is moved along the track. The ties thus pulled from the bundle fall to the ground in a position parallel with the track and as close to the rails as desired. It is pointed out that this feature is particularly desirable when distributing ties on high narrow fills, as it eliminates the likelihood that the ties will slide down the bank.

The steel strapping used for tie banding, which was developed especially for this purpose, is 2 in. wide, 0.065 in. thick, weighs 0.44 lb. per ft., and is furnished in coils. Preparation of the bands requires cutting the strapping to proper lengths, which is done with the aid of a coil-holding device with cutter, and joining the ends of each length with Brainard 2-in. double seals. The seals are applied by a sealing tool and the Brainard 2-in. sealing table. Banding the ties is accomplished by slipping a band over each end of a tram load of ties.

The recommended maximum load to be supported

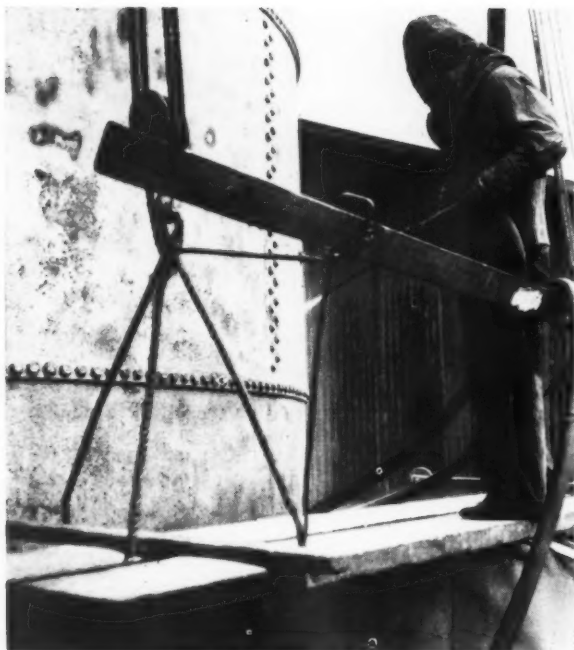
by the bands for either of the two types of lifts is 14,000 lb. Tests have shown that, with a load of this magnitude, the bands have a safety factor of 100 per cent. The joint made in the bands by the seals is reported to have a strength equal to 95 to 98 per cent of the tensile strength of the steel strapping. The cost of banding a bundle of ties with the shorter straps, including both labor and material, is estimated to be \$2.24. Assuming that each bundle contains an average of 53 mainline ties, the cost per tie is four cents, as already mentioned. The cost of banding a bundle for handling with the double spreader-lift would be somewhat more than this because of the additional amount of steel strapping required.

In the application of the method of packaging ties described in this article, the railroads or the treating plants would buy the steel strapping and seals. Patents for the lifting devices have been applied for, but the Brainard Steel Company will provide, to the railroads or treating companies, detailed drawings of these devices, with permission to use them without charge in constructing the spreader-lifts. This company will also furnish prints of the sealing table without charge, and will lease the necessary sealing and strapping tools.

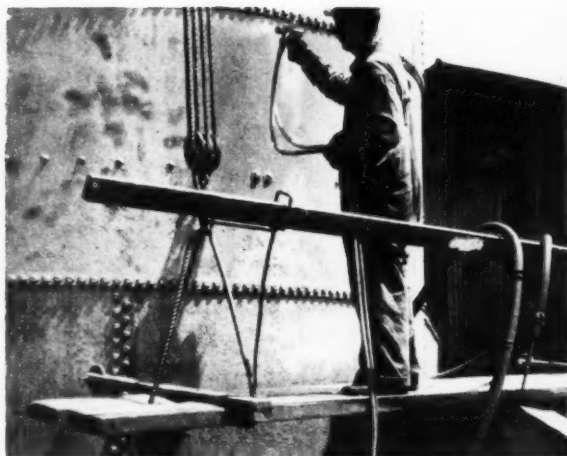
## es Handling Costs

Use of the double spreader-lift, coupled with excess slack in the bands, permits distributing single ties along the track by one man stationed on a catwalk, as shown in this photograph





When condition of metal is such that wire brushes and scrapers are inadequate, blasting method of cleaning should be employed



Whether paint should be applied by brush or spray is largely an economic matter, as either method produces durable coatings

## How to Make Steel

• Steel water tanks and standpipes should be carefully inspected at regular intervals of not more than five years in order to guard against excessive loss of metal resulting from the corrosion of inadequately protected surfaces. If the water or atmospheric condition is unusually severe, more frequent inspections are necessary. The loading on the tank tower structure of a 100,000-gal. steel tank is approximately 965,000 lb., and the reduction in sectional area and strength of the structural steel due to corrosion may lead to serious weakening or failure of the structure.

Corrosion of iron and steel is a chemical action which tends to cause the metal, when exposed to moisture and air, to revert to a form in which it was originally found in the earth. Under conditions of exposure, iron corrosion is composed mainly of ferrous hydroxide next to the metal, with ferric hydroxide forming the outer cover. Where iron corrodes in the atmosphere the amount of ferrous hydroxide is small, but when formed under water there is a larger proportion of the ferrous iron. The rate of corrosion of the interior underwater surfaces of a tank is almost directly proportional to the oxygen concentration in the water, provided other factors do not change. An increase in the

pH value of the water causes a decrease in the corrosion rate.

Corrosion of the surfaces exposed to the atmosphere is influenced by the length of time the tank remains wet, by the extent and kind of atmospheric pollution, and the presence of condensed moisture in the rust film. Moisture is the main controlling factor. The action of hydrogen sulfide, sulfur dioxide, and other substances in the air is much more rapid in moist air than in dry air.

### Inspection

It is recommended that the tank be drained completely and the inside surfaces washed down so that the sides and bottom of the tank and riser can be properly inspected. All loose deposits and mud should be removed from the bottom.

When making the inspection, particular attention should be paid to the following details:

(1) Anchor bolts should be examined for corrosion that may have reduced their strength.

(2) Column shoes should be watched for dirt accumulation and pockets which will hold water and cause serious rusting. They should be grouted with a mixture of sand and asphalt so that water will not run under them.

(3) Tower posts should be inspected for alignment and possible foundation settlement. Examine particularly the

condition of tower rods around pins and see that they are properly adjusted. These rods should not be removed for cleaning and repairing except when the tank is empty and adequately braced to prevent a possible collapse of the structure.

(4) Examine all clevis pins or cotter pins because a missing clevis pin will loosen the tank bracing and the structure may collapse.

(5) Inside and outside ladders should be inspected for weakened lugs and missing bolts that would make them unsafe. The revolving ladder on the roof should be inspected for a poor connection at the final.

(6) The condition of the roof metal should be checked along with the spider rods. If the spider rods are found to be in a dangerous condition, they should be removed but need not be replaced as they are for construction purposes only.

(7) The tank shell and riser should be inspected for pitting, loose rivets, and leaky seams.

### Repairing—Preparation

Before repainting it is necessary that all badly corroded parts be either repaired or replaced. It is not recommended that extensive welding be done on the tank shell but that the sheets be replaced where practical. Loose rivets and leaky seams should be caulked. A flat head rivet may appear to have lost a large portion of its head but a rivet does most of its work in shear and very little



# Steel Water Tanks

## LAST INDEFINITELY

in tension. As long as the rivet is tight it does not have to be replaced.

The surfaces should be cleaned free from all loose paint, scale, and rust before paint or any other protective coating is applied. Special care should be used to clean all pits and those parts difficult to reach. Paint or mill scale which adheres firmly to the steel need not be removed.

If the paint is in good condition, cleaning may be done by means of scalers, scrapers and wire brushes. Either hand or power-driven tools may be used.

When the condition of the metal is such that wire brushes and scrapers are inadequate, the blasting method should be used, with either chilled steel shot or coarse silica sand. Whenever metal is cleaned by blasting, it must be given the prime coat of paint as soon as possible on the same day.

### Painting

It is recommended that painting be done at intervals of five to six years to prevent too much damage to the tank from corrosion. When the paint is exposed to unusually severe conditions, more frequent painting will be necessary. It is important that the inside of the tank receive as much protection as the exterior, since most of the corrosion on the tank shell takes place from the inside. Cathodic protection has eliminated most of the need for painting the underwater surfaces. However, the tank shell should be painted from the rim to five feet below the water line. Cathodic equipment must be maintained and kept in operation if maximum protection is to be expected. Improved design of the equipment and correct electrode spacing have provided maximum economy and freedom from operating difficulties.

For protecting the interior underwater surfaces, a paint must

be used that is inherently impermeable to moisture in order to give maximum protection and extended durability. It is important that sufficient drying time be allowed between the application of each coat and also before filling the tank with water. Some of the types of paint that have proved effective in this service are as follows: Red lead and linseed oil containing a small amount of litharge for a hardener, special bituminous coatings, aluminum paints, petroleum compounds and other quality coatings that have been developed to give maximum protection to the steel when submerged in water.

For the exterior of the tank and the underside of the roof, red lead in linseed oil, when covered with a finishing coat of carbon or iron oxide paint, forms a very durable coating and will protect the steel from corrosion under most conditions for a long period of time. Chromate of lead pigment paints also make excellent priming coats but are relatively high in cost as compared to red lead. For best results these paints should be covered with two water-resistant finishing coats. Aluminum paint or black graphite may be used for finishing coats over a rust-inhibiting primer. Petroleum compounds are especially effective on the underside of the roof.

Paint should be applied only to a clean and perfectly dry surface, when the temperature is 40 deg. F. or above. Whether paint should be applied by spray or brush is largely an economic consideration, as either method will produce an equally durable coating. The cold application type coatings should be thoroughly rubbed into all depressions of the metal with a stiff brush to prevent the material from bridging over such a depression.

Adequate ventilation inside the tank is essential both to protect the workmen and to provide the necessary air for quick drying. After painting has been completed

This article is a report of a subcommittee of the Committee on Water Service and Sanitation of the American Railway Engineering Association, presented before its recent annual meeting in Chicago\*. In easily understood language it explains corrosion and its effect on metal, and how it can be prevented in railway water service tanks and standpipes by proper cleaning and painting.

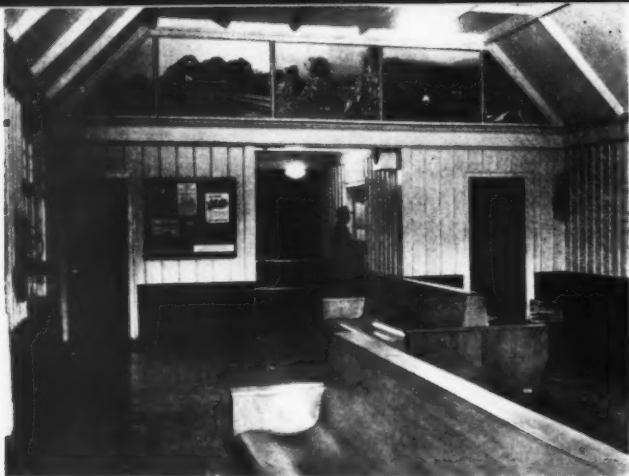
on a tank that is being used for drinking water purposes, it should be sterilized in accordance with board of health requirements.

Proper inspection and maintenance of steel water tanks is essential because of the investment involved and the excessive cost to replace them at current prices. With proper protection the useful life of steel water tanks can be prolonged indefinitely.

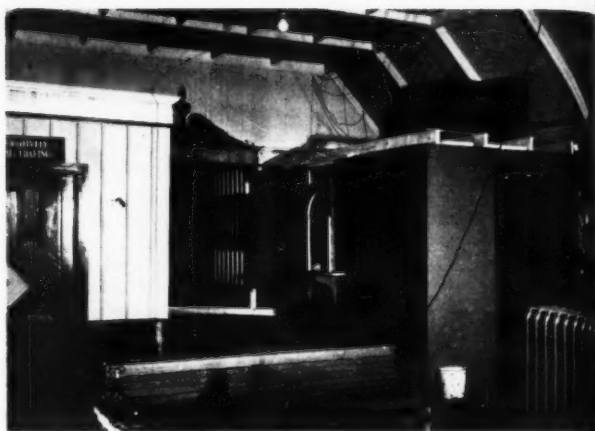
\*H. E. Graham, assistant superintendent of water service, Illinois Central, Chicago, was chairman of the subcommittee.



With cathodic protection to interior and proper protection to prevent corrosion of the exterior, roof and interior above water line, there is no reason why steel tanks should not last indefinitely



## N. & W. "Dolls Up"



• Since the war the Norfolk & Western has undertaken a program of remodeling and modernizing certain of its passenger stations to provide the communities involved with station facilities in keeping with the generally high standard of passenger-train equipment now being operated. This program included the larger stations at Roanoke, Lynchburg and Norfolk, Va.

Smaller in scope, but equally important to the communities concerned are the improvements made at three smaller cities in Virginia—Suffolk, Christiansburg, and Wytheville. The work has converted the stations at these points, which were typical of small-town stations over the country generally, into highly attractive, yet completely practical buildings.

For the most part, the modernization work was confined to the interiors of the stations and involved rearrangement of waiting rooms and toilet facilities, the installation of new interior finishes and decoration, and the improvement of the ticket offices. New heating was installed at each location, baseboard radiation being employed at Suffolk while radiant heating was installed at the other two points. Exterior work was held to the minimum, in the main consisting of cleaning and painting, except at Wytheville, where the appearance of the building was altered considerably and new platform shelters were constructed.

### The Work at Suffolk

The station at Suffolk, a one-story brick structure, was built 40 years ago and rearranged in some respects a number of years later. In the original design, it contained

The remodeled Suffolk station shown above presents a greatly improved appearance in contrast to its former condition (right). Large photographic murals add much to station's new look

two waiting rooms—one each for white and colored patrons—separated by the ticket office, and by the toilet rooms which were constructed back to back so as to serve the proper waiting rooms with minimum plumbing. In the earlier remodeling, the two women's toilet rooms, located between the ticket office and the men's rooms, were relocated to make room for a passageway connecting the two waiting rooms. This enabled both waiting rooms to be served by a single ticket window, opening onto the passageway. Small enclosures were built in each waiting room to house the women's toilets.

The waiting rooms had wood floors, walls and ceilings. The walls were battened, while the ceilings were truncated, with both the sloping and horizontal surfaces covered with beaded lumber, ornamented with molding in a gridiron pattern. Wooden benches lined the outside walls of the rooms, and the radiators were located near the center of each room. The walls and ceiling were painted grey, trimmed in dark brown.

The principal structural change in the recent work was to relocate the two women's rooms into part of the space occupied by the men's rooms. This called for reducing the size of all four of the toilet rooms involved, and for this reason the four rooms were entirely rebuilt. The new rooms have tile floors, and the walls are also

of tile to a height of seven feet. The remainder of the walls and the ceilings are of plaster. New plumbing fixtures were installed throughout. The new toilet stall partitions are Sanymetal "Porcelain" Academy Type in white porcelain enamel.

The old waiting room benches were torn out and the wall areas behind them were wainscoted with red birch plywood laid with the grain vertical. New flush-type doors, also of red birch, were installed throughout, those leading to the ticket office being glazed.

The old flooring was removed and a new hardwood floor was installed, after which a silver-grey, rubber-tile wearing surface was laid in the waiting rooms and the ticket office. The birch wainscoting, the doors, and new back-to-back benches built to replace those removed, were stained silver grey, while the original walls and ceilings were painted light grey. Large photographic murals of scenes along the N. & W. were mounted on the wall areas at the ticket office end of each waiting room.

New cabinets were installed in the ticket office, and the old-fashioned, grilled ticket window was replaced by a wider, open-type window with a glass panel, 24 in. high, above the counter, and a wire screen above the glass. A Kinnear rolling aluminum shutter permits closing the window outside of business hours.

Hot-water baseboard-type radi-

# Small-Town Stations

ators, fed by a forced-circulation, stoker-fired boiler, furnishes heat for the two waiting rooms and the ticket office. The ceiling areas of these rooms, both sloping and horizontal, are insulated with Rock-Wool. Lighting is by modern shaded drop lights.

## At Christiansburg

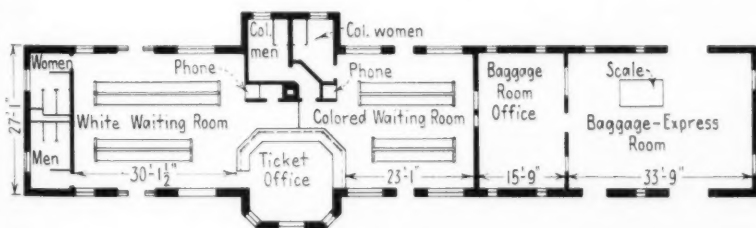
Although the station at Christiansburg was similar in its original design to that at Suffolk, the remodeling work took an entirely different form. Liberal use was made of glazed tile and plaster in replacing the wooden interior walls; an acoustical tile ceiling, several feet below the level of the old one, was installed; and an entirely new ticket office was provided.

The waiting room for white patrons occupies the easterly half of the building and was formerly separated from that for colored patrons by the toilet rooms and ticket office. In the recent work, the toilet rooms for whites were relocated to the extreme east end of the station to create a passage connecting the two waiting rooms,

which are suspended by means of wires from the joists of the old ceiling. The doors and woodwork are of selected red birch in a natural finish. The new waiting room benches, also of red birch, were finished in a similar manner.

The waiting room sides of the ticket office walls are finished in glazed tile to the counter level, with large panels of clear glass above to a height of 10 ft. The ceiling directly over the ticket office is dropped 18 in. below that of the adjacent rooms, and a 12-in. opening extends around the perimeter of the office between the top of the glass panels and the lower side of the dropped ceiling. The office has three ticket windows which, like those at Suffolk, may be closed by rolling aluminum shutters.

The Christiansburg station is the first small structure on the N. & W. to be equipped throughout with a radiant heating system. The radiant grids and coils are of Bethlehem Steel's Rayduct steel pipe, laid in a four-inch slab of concrete forming the sub-floor. The slab, in turn, rests on a fill of clean earth. Water for the system



while new toilet rooms for colored were built in an area formerly occupied by the two men's rooms. The new ticket office, shaped in the form of a semi-octagon, occupies a position between the waiting rooms, with its ticket window opening on the new passageway.

New flooring of reddish-buff quarry tile was installed in the waiting rooms, while asphalt tile was used in the ticket office. The waiting room walls are wainscoted with buff-colored glazed tile—with plaster, painted light pastel green, above. The ceiling is of acoustic tile, attached to furring strips

Above—Plan of the remodeled station at Christiansburg

Right—The remodeled ticket office at Christiansburg, with glass walls from the counter nearly to ceiling, creates a friendly atmosphere for the sale of tickets



During the past two years the Norfolk & Western has modernized its passenger stations at three smaller cities on its lines. The work was largely confined to interior changes, involving new decorations, rearrangement of waiting rooms and the installation of new heating. This article high-lights the work at each location.

is heated in a stoker-fired boiler located in a small basement.

Exterior work was confined to painting the building, installing glass-block windows with aluminum ventilators in the toilets and metal-sash windows in the rest of the building. A dark grey wainscot color was applied to the height of the window sills on the exterior brickwork, with a lighter shade of grey above. The metal windows, the doors and the platform shelter columns were painted to match the wainscot.

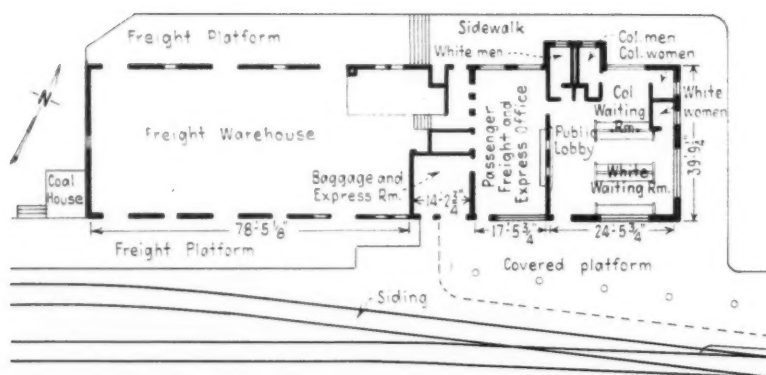
## Improvements at Wytheville

The improvements at Wytheville were undertaken not only to modernize the passenger facilities, but also to provide more room in the freight and express sections of the building and to afford a better arrangement for transacting freight and express business.

This structure was originally laid out with a large waiting room for whites in the east end and a smaller room for colored directly west of the room for whites. The ticket office, however, was near the center of the white waiting room, an arrangement which resulted in much inconvenience.

The express and baggage room





Above—Floor plan of remodeled station at Wytheville

Left—The white and colored waiting rooms at Wytheville are separated by a back-to-back bench with a low, corrugated glass screen above

was directly west of the colored waiting room, while the freight-house occupied the extreme west end of the building. Persons calling at the station with regard to express and freight matters had to come to the ticket office to transact business and then go to the warehouse to pick up or deliver shipments.

Express and passenger business at Wytheville has declined over the years, but the volume of freight has increased because of new industries in the vicinity. Thus, the freight-house section of the station was frequently cramped for space, while the waiting rooms were empty except at train time — and then were far from crowded.

### The New Arrangement

In the new layout, both the white and colored waiting rooms are located in the east end of the station. A combined ticket, freight and express office occupies the westerly part of the old waiting room for whites, while the former colored waiting room was converted to additional space for freight, express and baggage.

Although the white and colored waiting rooms are now in the same room and are entered through a common lobby near the ticket window, the two areas are separated by a back-to-back bench, similar to those installed at Suffolk and Christiansburg, but with a low corrugated glass screen mounted on top of the common back. Toilet rooms for women are provided in the northeast corner of the room, arranged so that each race may enter from their section. The toilets for men are entered from the ticket lobby.

The new office extends across the full width of the station. The ticket window and a baggage window are on the east wall of the office, being separated by a bulletin board. A small door beneath the baggage window permits baggage to be passed between the office and the waiting room.

A small freight lobby, entered from the north side of the station, is located at the northwest corner of the office and is provided with an open counter where freight and express business is transacted. A short passage leads from the lobby directly to the freight warehouse.

The waiting room floor is of terrazzo, laid in a checkered pattern of light green and pink. The walls are of cream-colored glazed tile to a height of three feet, with plaster above. The ceiling is of Celotex acoustic tile.

Special treatment was given the plaster walls of the waiting room. The area between the top of the wainscot and a height of 9 ft. 9 in. was scored vertically before the plaster had set and was later sized and painted white with a semi-gloss finish. Then this area was glazed with umber and sienna and wiped off carefully, producing an effect of reeded paneling. The smooth plaster above the scored area was painted light ivory. Recessed fluorescent light fixtures provide lighting for the waiting rooms.

A radiant heating system was installed in the waiting rooms, office and toilet rooms of the Wytheville station. Direct radiation is employed in the baggage room, while the freight-house is not heated. As at Christiansburg, the boiler is stoker-fired, and Rayduct pipe, laid in the concrete sub-floor, was used for the heating coils.

### Concrete Platform Shelter

Exterior changes included the removal of old wide eaves and the substituting of a trim wood cornice. Three high chimneys were removed and one new low one was erected to serve the furnace.

An umbrella shelter, extending along the track platform directly in front of the station, was torn down and replaced by one of reinforced concrete. This shelter, 209 ft. long and 13 ft. wide, is supported at 16-ft. intervals by reinforced concrete columns, 16 in. in diameter. An aluminum fascia strip, 9½ in. wide, extends along both sides of the shelter.

The shelter is connected to a canopy of similar design which extends over the area directly in front of the station. The final exterior work was the repaving of the platform with tarvia-lithic bituminous paving and the releveling of the platform curbs.

The remodeling work described in this article was carried out under the general direction of A. B. Stone, chief engineer of the N. & W., and H. F. Smith, engineer of bridges and buildings, Roanoke, Va.



# WHAT'S THE ANSWER?

An open forum for maintenance men on track, bridge, building and water service problems



## Examinations on Rules and Safety

What men in the track department should be examined on railway operating rules and on safety? How thorough should the examinations be and how often should they be held?

### Hold Exams Every Two Years

By R. R. MANION

Engineer M. W., Great Northern, St. Paul, Minn.

All track department employees who operate track cars or road-way machines on or near the track, and employees who will be charged with the responsibility of protecting the track, plus the supervisors of these men, should be periodically examined on the railway operating rules applicable to their duties and on the safety rules. Included among these employees are track and special or extra-gang foremen, track inspectors, machine operators or work equipment engineers, lead men in gangs, track-car operators, welders, bus and truck drivers, tunnel and track watchmen, fire and slide patrolmen, and roadmasters or supervisors.

In addition to these people in the track department, examinations should also be given to the foremen and supervisors in the bridge & building department, telegraph and telephone linemen, signal maintainers and helpers, engineering department personnel who operate track cars and telephone inspectors. It is essential that all these people listed should be thoroughly schooled in the operating rules which affect their duties.

The examinations and instructions on the operating rules should cover the general rules for all employees, definitions, rules governing standard time, time tables, signals and their use, engine whistle signals, train signals, flagging signals, and particularly the rules governing flagging. Safe operation of a railroad requires that

not only the enginemen, and trainmen thoroughly understand flagging signals, but that employees in other departments placing signals have the same understanding as employees who must act upon them.

Instructions and examinations should cover the operation of track cars and equipment, rules governing spring switches and interlocking equipment, the specific instructions governing each class of work, and should include the outlining of the duties and responsibility incident to that class of work.

In the conduct of the examina-

tions it must be determined that the employees being examined both know and understand the rules. All classes should be held in such a manner that the persons being examined are encouraged to discuss any questions they may have regarding the application of the rules.

Such classes should thoroughly cover the safety rules. Examinations of the employees alone will not assure their understanding of and compliance with these rules. We make a practice of holding the formal type of examination every two years. This examination is conducted by a regular rules examiner assisted by the division officer in charge. To assist in keeping the rules before the men, I believe it is well to post on all bulletin boards a "rule of the week," which is a safety rule proposed by supervisors as being of

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, *Railway Engineering and Maintenance*, 79 W. Monroe St., Chicago 3, and reach him at least 30 days in advance of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

### To Be Answered in the June Issue

1. What is the most effective method of providing adequate drainage of multiple tracks through low-level station platforms? Explain.
2. To what extent is built-up aluminum roofing adaptable to use on railway buildings? How should it be laid to produce the most effective results? Explain.
3. Under what circumstances, if any, is it more advantageous to crop rail than to build up the rail ends by welding? Why?
4. How practicable are devices applied to railway bridges and trestles to warn of high water or other hazards to the safe passage of trains?

Under what conditions should they be used? How do such devices operate?

5. How can track-lining devices be used most effectively in lining curves, turnouts, frogs and other special trackwork? What are their advantages?
6. In brief, what are the general requirements set up by the Water Pollution Control Act as it affects railways? What instructions should be issued to operating personnel to reduce to the minimum the problems involved in compliance with this Act?
7. After complete Dieselization, to what extent can enginehouses, shops, coal docks, and other terminal building facilities be converted to other uses? Explain.

particular importance at the time it is to be posted.

Division officers going over the railroad during their regular tour can further the educational value of both the "rule of the week" and periodical examinations if they will question the men on the job about the current rule and about rules and practices that are involved in the type of work in which the men are engaged.

Because it is impracticable to hold regular examinations oftener than every two years, it is necessary, in addition, to have some other means of adjusting practices and bringing together groups for discussions on safety matters. Regular monthly safety meetings have great educational value and are a necessary supplement to examinations and on-the-job instruction.

### Examine ALL on Safety

By JOSEPH C. LARRY

Track Supervisor Baltimore & Ohio,  
Elyria, Ohio

Supervisory employees, including track supervisors, assistant track supervisors, general foremen, track foremen, and bridge & building foremen, should be examined at least once a year on operating rules and safety. Lesser supervisory employees and key personnel, such as assistant track foremen, assistant bridge & building foremen, motor-car operators, flagmen, equipment operators, track walkers, tunnel and bridge watchmen, and crossing watchmen, should be examined every two years. But ALL non-supervisory employees in the track department should be examined in safety at least once a month.

Because of their responsibilities for the safe operation of trains and to the employees under their jurisdiction the first group of men comes into closer contact than the others with railway operations. Men in this group should familiarize themselves with the rules, so that they will be able to give correct answers when questioned by other employees.

This group should be examined thoroughly on train orders, block signals, engine-whistle signals, hand signals, time-table rules, track-car operator, flagging rules, markers and signals displayed at the front and rear of trains, and on all safety rules of the different departments. The examinations

should be conducted by an official rules examiner, and each person being examined should be furnished with a list of questions, the answers to which he should write on another paper.

After allowing sufficient time to answer all the questions, the examiner should collect the papers and inspect them. If any incorrect answers are found, the question should be explained to the entire class and the correct answer given. The examiner should also grade each examination paper on a percentage basis—70 per cent being a passing grade.

Any person with a grade below 70 per cent should be re-examined within two weeks. If a person fails to pass his second examination, he should be subject to demotion to a lower position, if in the judgment of his superior officers such action is warranted.

The group of employees to be examined every two years should be examined on the safe operation of track cars, the proper method of flagging, on block-signals, time-table rules, engine-whistle signals, hand signals, and ALL safety rules. This group should also be required to pass a written examination, with the same penalty for failure as stated for the first group.

A good method of examining all non-supervisory employees on safety is for the track supervisor to hold meetings at different points on his territory, and have all men in that territory attend these meetings. Owing to the number of men in the track department who cannot read or write such examinations should be oral. Such men will learn the safety rules quickly by attending meetings in this manner.

## Providing Cushions for Bridge Seats

What are the advantages of using a cushioning material between the steelwork of bridges and its supporting masonry? What special features should the material have for this service?

### Pads Showing Good Results

By SUPERVISOR BRIDGES &  
BUILDINGS

The use of a cushioning material between the steelwork of bridges and the supporting masonry is two-fold. The primary purpose of such material is to distribute evenly the dead and live loads over the entire bearing area. Such even distribution can be obtained by the cushioning material compressing under load and adjusting itself to the irregularities in the masonry bridge seat or in the bearing plates. The advantages of such uniform distribution of loads over the bearing areas are obvious.

The secondary purpose of cushioning pads is to absorb vibration that develops as trains pass over the structures and to eliminate the abrasive action that would otherwise occur between the plates and the masonry. Such

abrasion on uncushioned bridges has, in the past, been the cause of a great deal of maintenance expense. It is seldom that the wear is the same on adjacent bridge seats, thereby causing a warp in the structure under load. This accentuates impact, impairs the cross level of the track rails, and eventually results in the track on the bridge getting seriously out of line. If the bridge seats are not repaired, the track may have to be spike-lined—thereby fostering more rapid deterioration of the bridge timber. The whole process of abrasion of bridge-seat masonry is a vicious circle of troubles that can best be corrected at their source.

We are using a proprietary pad for this purpose, and although these pads have not been in service on my territory for a very extended length of time, they have so far, shown every evidence of being an effective means of accomplishing the desired end. How long they will remain effective is, as yet, unknown, but in any case they will not have to last much longer to prove their worth.

Cushioning material, to be effective, must have resilience, but be inherently strong; must resist



weathering; must not absorb moisture; and must not foster corrosion. The pads we use consist of multiple layers of close-woven duck impregnated with rubber prior to being processed by heat

and pressure. To date they seem to have the qualities desired in a cushioning material for use on bridge seats. How long they will retain those qualities in service is as yet indeterminate.

## Frequency of Cleaning Cribs

Is it advisable to clean crib ballast as frequently as shoulder and intertrack ballast? If not, what relationship should obtain? What considerations are involved?

### Depends on Conditions

By H. J. WECHEIDER

Engineer M. W., Erie, Youngstown, Pa.

This subject is one which affects both the economy and the quality of the work in the performance of track-raising operations. Local conditions govern as to whether or not the ballast in the cribs should be removed and cleaned along with the out-of-face machine-cleaning of the ballast in the shoulders and in the inter-track space. Therefore, it is difficult to arrive at any set calculation as to the frequency of cleaning the crib ballast as compared to the shoulder and inter-track ballast.

The removal and cleaning of crib ballast should not be neglected when found necessary. Moisture from muddy ballast in the cribs will flow to the ends of the ties in the shoulder and inter-track ballast and form a hard, compact cake at the tie ends, thereby preventing the water from getting out of the cribs. This increases the formation of mud in the cribs, which works in under the ties and creates undesirable conditions, adversely affecting the riding of the track and resulting in unnecessary damage to ties, rail and fastenings through the pumping action. In other words, it is not good policy to perpetuate muddy ballast in tie cribs or to tamp muddy ballast under the ties, and if such ballast is not removed and cleaned, it will eventually find its way under the ties. The expense of reballasting track at the present time is high, and if the ballast is kept clean the necessity for doing such work will be minimized.

It is understood that the best track conditions are obtained and maintained where ballast is clean, thus assuring proper drainage for the track structure. To bring

about these results, it is desirable at some specific locations to remove the foul ballast from the cribs for the purpose of cleaning it.

These specific locations are selected just prior to the start of the working season from a careful inspection on the ground within the limits of our various programmed reballasting, resurfacing and tie tamper jobs. As a result of the inspection a cribbing-machine program is made up, and naturally all cribbed locations are included in our ballast-cleaning program for both shoulder and intertrack cleaning. There are some locations where it is found that an out-of-face removal of ballast in the cribs is necessary, while in other locations spot cribbing is all that is required. The out-of-face cleaning of the shoulder and intertrack ballast by the ballast-cleaning machines is sufficient to afford adequate drainage for the portions which are not cribbed in these particular spot-cribbing locations. Some curves are encountered, particularly when the outside track is at a lower level than the inside track, where muddy ballast has developed from just inside the low rail to the tie end. In such cases, it is not necessary to clean the entire crib, but the fouled ballast in the low side of the curve should be removed by cribbing machines designed for cribbing one side only, or by hand if such a machine is not available.

It is often necessary to remove fouled ballast from the cribs for cleaning at locations where the ballast has a tendency to "muddy up and churn", owing to the presence of foul ballast formed by a granulated slag sub-base, or at locations where the height of the raise is restricted by a succession of crossings, by station platforms, or at bridge locations, or under overhead structures.

On the other hand, speaking from a general viewpoint, in our opinion crib ballast which is merely dirty, for instance from stack ashes or an accumulation of sand on grades, but which has not shown a tendency to "muddy up or churn" under traffic, need not be cribbed. In such locations, cleaning the ballast in the shoulder and in the intertrack, without cribbing between the ties, should be sufficient to establish suitable drainage for the tie area.

Summing up the question in a general way, the principal drainage of the track structure results from clean ballast conditions at the shoulder and in the inter-track space, and if the ballast at the tie ends is frequently cleaned, water will drain out of the track and in most instances will afford sufficient drainage so that no pumping action will result. To bring about such conditions, a regular cycle of track raising and ballast cleaning at the tie ends must be maintained. With the advent of Diesel power, the problem of stack ashes fouling the ballast will, in time, become nil, and as a result in numerous locations where track has a good stable sub-base, the cleaning of ballast in the shoulders and the intertrack should suffice.

At locations where raises are restricted or there is an unstable sub-base with the water table relatively high, and where there is a tendency for the wave action of the rail under traffic, especially at high speeds, to cause ballast to muddy up and churn between the ties, the crib ballast should be removed to the shoulder and intertrack, and cleaned at the same time the track is worked over.

On the Erie, through the installation of drainage projects at unstable locations, the addition of more Diesel power, and the extensive use of ballast cleaners, we anticipate that the amount of cribbing required will become less each year.

### Clean Cribs Less Frequently

By L. H. BOND

Assistant Engineer, Illinois Central, Chicago

It is not advisable to clean crib ballast as frequently as shoulder and intertrack ballast, the reason for this being that the shoulder



and intertrack ballast becomes fouled first and the crib ballast does not become fouled until after the shoulder and intertrack ballast is so dirty that drainage is blocked. In fact, theoretically, with clean shoulder and intertrack ballast the crib ballast would never become fouled. However, as a practical matter, the crib ballast does become dirty over a period of time, and when this occurs both crib, shoulder and intertrack ballast

should be cleaned and the track raised.

If we assume a cycle, based on sub-soil conditions, traffic, etc., on which the shoulder and intertrack ballast should be cleaned, we will be safe in adopting a cycle three times longer for the crib ballast. It is fortunate that this condition exists as cleaning the crib ballast is a much more costly process than cleaning the shoulder and intertrack ballast.

## Lighting for Railway Buildings

What are the relative advantages of fluorescent, incandescent and mercury-vapor lighting in railway buildings? Where can each type be used to best advantage? Can they be used with special benefits in certain combinations? Explain.

### Not a Guessing Game

By H. H. HELMBRIGHT

Railway Lighting, Engineering Division,  
General Electric Company, Nela Park,  
Cleveland, Ohio

Generally speaking, railway shop buildings are large in area, throughout which work of a varying nature must be carried on in somewhat restricted areas. The quantity of illumination for what might be termed non-critical work, such as locomotives and car repairing and work of a similar nature, should be maintained at about 30 foot-candles.

Machine operations, work in carpenter shops and armature winding are typical operations requiring critical seeing, and can be lighted to advantage with approximately 50 footcandles. Where still higher illumination values are required, local lighting equipment can be used to supplement the 50 footcandles of general illumination.

Where high-bay areas are involved, one or two traveling cranes may run the entire length of the shop. In such cases the lighting system must be installed above the top crane. If the luminaires must be mounted higher than 40 ft. above the floor, a combination system of 3,000-watt mercury lamps and 1,000-watt filament lamps in high-bay type luminaires should prove satisfactory. Mercury lamps of high wattage comprise a high-efficiency light source, requiring considerably fewer units than if less efficient types are used. For this reason, this type lamp is relatively cheap to install and operate. The

1,000-watt filament lamps are used with the mercury lamps to balance color, as well as to provide standby lighting in instances where frequent power interruptions may cause the mercury lamps to go out for a short period of time. When the power is interrupted on a mercury lamp it takes a few minutes for the lamp to come up again in brightness after the power is restored.

In shop areas where mounting heights ranging from 20 ft. to 40 ft. above the floor are encountered, it is customary to use the 400-watt mercury lamps in combination with either 750 or 1,000-watt filament lamps. The filament lamps are recommended again here for the same reasons mentioned above.

The filament and mercury lamps may be staggered or used together in tandem luminaires, involving one mercury and one filament lamp. This tandem arrangement works out very nicely in that it tends to minimize the stroboscopic effect produced by the mercury lamps, before the light reaches the work areas. Tandem luminaires accommodating two mercury lamps may also be used with satisfaction if staggered with filament-lamp luminaires. Two-lamp transformers are available for such operation and their use greatly reduces wiring costs.

For mounting heights below 20 ft. it seems advisable to employ standard fluorescent lamps in conventional luminaires. The low brightness of these lamps minimizes direct and reflected glare, their extended length softens shadows, and their high efficiency and long life make them very suitable for such locations. In general, the luminaires should be located so that the longitudinal edge of the reflector is faced toward the worker. By so doing, protection is afforded against direct glare in the line of vision. When fluorescent installations of the order of 50 footcandles are made it is desirable to locate the luminaires in continuous rows.

In areas where the work carried on is not of a critical nature, or where artificial lighting is used intermittently, the filament-type lamp installation may prove the most economical. Filament lamps differ from fluorescent lamps in that their life is not shortened by frequent starting.

## Personnel Operating Water Stations

Under what conditions, if any, is it satisfactory or desirable to place the operation of water stations in charge of agents or other employees? What are the advantages or disadvantages?

### Many Now Automatic

By W. D. GIBSON

Water Service Engineer, Burlington  
Lines, Chicago

Water stations have been successfully operated in charge of agents, operators, sectionmen or other employees for many years. Most of the earlier water stations were steam operated, a condition which generally required a regular pump. However, after the development and improvement of

the internal combustion engine, it was found that at many of the smaller stations some local employee could handle the pumping in conjunction with, or after the completion of, his regular duties. A modest sum of extra compensation for additional work was agreed upon. Later the schedules with the various organizations included fixed sums for these duties. This method of operation was generally quite satisfactory and proved to be an important eco-



nomical factor. Many of these plants are still in use.

The expansion of electric distribution systems to the smaller communities made possible the improvement and modernization of many pumping plants at which the duties were first considered too great for part-time operators handling internal combustion engines. The installation of fully automatic equipment in many cases made it possible to eliminate the need for an operator except where treatment was required, or to care for fires during the winter season. These duties were assigned on a part-time basis to available employees and were occasionally contracted to an outside party for nominal compensation.

Declining traffic and increased Dieselization has greatly reduced the need for water on most lines, permitting the retirement of many water stations, but because of the fact that some steam power is still in use, enough stations strategically located must be retained to serve the steam power. This situation in many cases has been met by having the water service maintenance men take care of the pumping at several stations on their territory. To do this, these maintainers have been equipped with light trucks for ready transportation.

The various factors enumerated above have made it possible to eliminate the services of regular pumping-plant operators at practically every station on our line, and the only apparent disadvantages of operating various stations with part-time employees has been the occasional failure to obtain an employee who has been interested enough in the work to give reasonable care and attention to the equipment. It is possible that some additional maintenance expense has been incurred on account of this, but the economies that have been effected over the years have been great.

### Desirable To Use Agents

By HOWARD E. GRAHAM

Assistant Superintendent, Water Service, Illinois Central, Chicago

The installation of modern pumping equipment and the adoption of various forms of automatic and remote controls for water stations has made it desirable that agents or other employees be made responsible for

their operation, and for reporting to the proper authorities any operating troubles that may be encountered.

Outlying water stations that are operating on automatic control should be, where possible, provided with a low-water alarm in the nearest agent's or operator's office. These alarms should consist of a light, a bell, or both, in order that the agent will receive a warning in sufficient time to notify the operating and maintenance departments of any trouble that may have developed in the water station so as not to cause any train delays. This alarm circuit may consist of separate wires run on present pole lines or may be incorporated in CTC circuits where available. Where it is not possible to install such a warning device in the agent's or operator's office a flashing light may be installed on

the water tank or other appropriate place. It should then be the duty of passing trainmen or maintenance men to report at once any low-water alarm indication.

At terminals where water-supply facilities are on automatic control or where pumpers are not on 24-hr. duty, the low-water alarm should be installed in the general foreman's office or other suitable place and the personnel held responsible for reporting all abnormal indications. At some intermediate water stations where water consumption is low and it is not economical or feasible to install automatically controlled equipment or where a full-time attendant is not justified, it is desirable to provide additional duties for the attendant or place the operation of the water station in charge of the agent.

## Making Annual Switch Inspections

What are the advantages and disadvantages of having annual switch inspections? When and by whom should they be made? What should be covered? Explain.

### Assures High Standards

By C. G. GROVE

Chief Engineer Maintenance of Way, Western Region, Pennsylvania, Chicago

It has been our policy for many years to have a formal annual frog and switch inspection to supplement regular, periodical inspections made by foremen and signal maintainers. Such inspections, when carefully made, bring the interlockings, turn-outs, derails and crossing frogs to a high standard of maintenance. Of equal importance, however, is the systematic follow-up to correct any defects noted on the inspection. Without such thorough observations by all concerned, many details would be neglected. Some of these might not affect the safety of operation, but their continued neglect would result in a gradual deterioration of conditions.

Switch inspections should be carefully programmed well in advance. This enables track forces to renew timbers, tighten and renew fastenings, perfect surface, line and gage and all other details, and so place turnouts, derails, and crossing frogs in the best condition possible. The local supervisors and foreman are members

of the inspection party over their respective territories. This has a tendency to arouse their interest and enthusiasm and their desire to make a good showing. It also enables the chief engineer to compare standards and performances on various divisions.

The inspection party travels by track inspection car or rail-highway truck, and includes the chief engineer maintenance of way, or his representative; a representative from the office of the superintendent, telegraph & signals; the division engineer; supervisor of track; supervisor, telegraph & signals; signal maintainer; and one or two recorders. Each member of the party is assigned certain numbered specific items on the inspection form. This expedites the inspection and makes possible a uniformly good inspection in minimum of time. The recorders fill out the standard forms in quadruplicate. A copy is then sent to each individual concerned, including the section foreman. A copy of the previous year's inspection is carried along, details of which are announced as each switch is approached.

Such items, if any, that are of a critical nature are marked red

for immediate correction. A total of 84 items are recorded for each turnout on the printed inspection forms, and include surface, line and gage at the various critical points from ahead of the switch to the end of curve back of the frog; the condition of timbers, fastenings and all other parts; and any grinding or welding that may be required.

Following the inspection, a monthly report is made by the supervisor to his division engineer and chief engineer maintenance of work, showing the percentage of defects corrected during the month. These reports are checked to assure that all items are corrected.

Experience has shown that such annual inspections serve to bring our switches and crossings to a high standard of maintenance in all details, and that the system of monthly reports helps to keep them there.

### Are More Than Compensatory

By MALCOM E. CONDON

Track Supervisor, Erie,  
North Newark, N. J.

It is vitally important in the provision of good track maintenance to inspect every switch, both main and yard, at least three or four times each year, and with greater frequency at locations where maintenance or operating conditions warrant a closer check. On this railroad the switch inspection is made on a monthly basis by the track supervisor. Whenever possible the foreman on each section assists the supervisor, to the end that conditions found requiring correction can be discussed on the ground and a program established immediately to do the necessary work. The utilization of Switch Inspection books for the maintenance of progressive inspection records is very desirable and provides an up-to-date, accurate listing of the various items of switch material comprising each turnout, and the condition of this material. Such books, in use on this railroad, contain records of the following turnout details: Switch stand—kind, number, date installed; switch points—RH and LH; rail section—kind, length, date installed; guard rails—main and side — rail section, kind, length, date installed; frog—rail section, kind, number, length, kind of frog

plates, date last welded, date installed.

The field-inspection notes include the date of inspection; gage at the point; condition of points, slide plates, braces, stock rails, and switch stand; throw at the point, obstruction and latch, for both normal and reverse position; frog gage, main and siding; condition of frog, frog bolts, buffer (in spring frogs); and flangeway opening of guard rails, (main and siding).

It can be readily seen that by keeping such a comprehensive record of each switch on the territory, the track supervisor can anticipate necessary renewal of switch materials well in advance and have such materials on hand when excessive wear or other factors dictate replacement. It might appear that too much time would be involved on the part of the supervisor in making such in-

spection, particularly if conditions at many switches necessitate frequent inspections. This is not true, and after the records have once been established for each switch in the Switch Inspection book, subsequent unit inspections can be made very quickly.

On territories where the switches are scattered, the inspections can be carried out in conjunction with other supervisory work. In yard or industrial areas where switches are relatively close together, it is advantageous to make the inspection of the switches as a separate job, and cover a given territory each time.

Regardless of the amount of time required in this switch inspection, the advantages gained through better maintenance and the elimination of inherent derailment hazards at switches will prove considerably more than compensatory.

## The Latest in Brick-Laying Devices

What are the latest developments in brick-laying devices? To what extent are they adapted to use by railway building forces? Explain.

### Brick Layer Now Available

By PAUL H. SOMMERS

President, Hodgson - Sommers, Inc.,  
Montgomery, Ala.

Out of a background of more than 50 years of construction experience, a brick-laying device has been developed, thoroughly tested, retested, and finally offered to builders as a practical machine that will lay brick faster, better and at lower costs than hand methods. With this new device any construction worker—even if unskilled — finds it easier to lay brick at a high rate of speed. While making it possible for unskilled men to lay brick effectively, it will also step up the efficiency of experienced masons. This has been proved in on-the-job tests in which 3,000 brick per day have been laid in 12-in. walls and as many as 2,000 brick laid in 8-in. walls.

To accomplish such feats, one might think a large machine would be required. On the contrary, however, the new brick-laying device is quite compact, weighs only 25½ lb., and can be assembled by inserting eight toggle bolts in key parts. Although

simple in construction, this tool can be adapted for any normal construction work involving brick—with one single exception—it will not lay a veneered brick face. It is adjustable for wall widths ranging from 8 in. to 13 in. and for brick heights to 2½ in. and brick lengths up to 8½ in. It can also be used to lay 10-in. "cavity" walls. In all uses, the tool aligns walls both vertically and horizontally, and the use of leads is not necessary.

The brick layer will lay running bond, common American bond, English bond, Flemish bond, headers and rowlock. Bed joints are adjustable for thicknesses ranging from ⅜ in. to ¾ in. As normally arranged the tool will provide a recessed joint, but with a slight modification for professional use, it will provide a flush joint.

The tool is as well adapted to use by railway building forces as by the construction industry. Unskilled men soon become proficient in its use and experienced men can increase their efficiency. The overall result of using the device is lower costs for more rapid work.

# PRODUCTS OF MANUFACTURERS

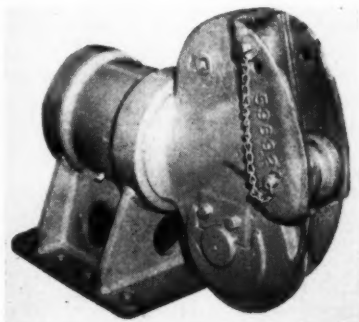
New, improved equipment, materials, devices



(For additional information on any of the products described in these columns, use postcards, page 323)

## AMERICAN FAIRLEADER

A NEW all-steel fairleader, with a throat large enough to pass a joint made with Crosby wire-rope clips, has been announced by the American Hoist & Derrick Co., St. Paul, Minn. The unit is designed for application where an off-lead is necessary, or where more universal swiveling is required than is possible with a snatch block. The sheave block and head are mounted on anti-friction bear-

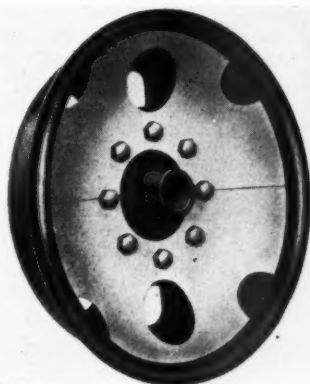


The new American Fairleader

ings. The new fairleader is available for wire rope sizes of  $\frac{5}{8}$  in., 1 in., and  $1\frac{1}{2}$  in., and is designed to withstand the full strength of the wire rope.

## WHEEL SILENCER FOR MOTOR CARS

A DEVICE designed to minimize the undesirable noises usually encountered with demountable hub steel motor-car wheels when in operation, has been developed by Fairbanks, Morse & Co., Chicago. The product is a sound-deadening disk, in two sections, which can be applied to any type of motor-car wheel (except those with reinforcing ribs on the hubs) without removing hub or wheel plate.

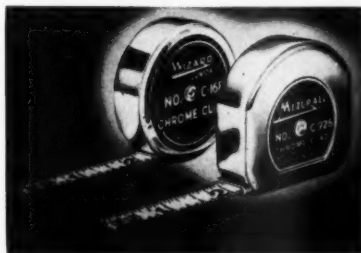


The Fairbanks-Morse wheel silencer for motor cars, which deadens wheel noises and thereby increases the hearing range of the riders

## LUFKIN RULES WITH CHROME-CLAD BLADES

THE Lufkin Rule Company, Saginaw, Mich., has announced that its Mezurall and Wizard Jr. steel tape rules now have Chrome-Clad non-glare blades which absorb light reflections and afford easier readings of all markings and graduations. The black markings on the blade stand out sharply against the hard smooth chrome-white finish, and, being sunk below the surface, are protected against wear. The blades are rust resistant and are said not to chip, crack or peel.

Manually operated, the blades



The Lufkin Mezurall and Wizard Jr. steel tape rules with Chrome-Clad blades

run smoothly into or out of the case and are held at any length withdrawn by a stop catch which guards against breakage when not in use. They are equipped with self-adjusting end hooks which assure accurate butt-end or hook-over measurements. The cases of the tapes fully enclose the Chrome-Clad blades, guarding against grit interfering with smooth tape operation. The blades are easily replaceable.

## DIESEL-WATER TEST KIT

THE Dearborn Chemical Company, Chicago, has announced a new compact test kit to give quick, accurate chromate readings of Diesel cooling water. The new cabinet, called the Chromokit, is a small metal case containing all the necessary test material for treatment adjustment and prevention of corrosion.

In application, a sample drop



The Dearborn Chromokit for testing Diesel cooling water

of the cooling water is placed on a chemically-treated test card and after two minutes, the reaction produces a color which is checked against a color guide for determining whether the treatment strengths are satisfactory or if adjustment is necessary. The adjustment chart is said to furnish



For additional information on any of the products described on this page, use postcards, page 323.

an accurate and simple method of treatment determination. In addition to the color charts, dosage-treatment chart and instructions, the kit contains sample bottles with droppers and sufficient test cards for making 80 tests.

## REYNOLDS BUILT-UP ALUMINUM ROOFING

APPLYING in a single step a built-up roof surface consisting of two layers of felt protected on top



Applying Reynolds Rey Kool Selvage Built-Up Roofing

by a layer of aluminum, is now possible through the use of a new building material, known as Rey Kool 19 Selvage Built-Up Roofing, developed by the Reynolds Metals Company, Louisville, Ky. This roofing is constructed of a sheet of stipple-embossed aluminum, 17½ in. wide, factory laminated to one side of a 36 in. width of 15-lb. asphalt-saturated roofing felt.

The new roofing is laid in accordance with conventional practice. Each course as laid covers an area 36 in. wide with a 17-in. width of exposed aluminum. Succeeding courses are lapped over the bare felt and ½ in. of the aluminum, leaving 17 in. of the latter exposed. Thus a double layer of felt protected by the aluminum is provided.

The solid layer of aluminum provides effective protection of the layers of felt, preventing this material from cracking, peeling and blistering. Factory lamination of the aluminum to the felt pro-

vides a more perfect weather seal. The aluminum also is said to reflect up to 95 per cent of the sun's radiant heat and thereby reduce inside temperatures as much as 15 deg. The Rey Kool roofing is available in 40-lb. rolls, each containing 72 lin. ft.

## WEED KILLERS IN HIGHER CONCENTRATIONS

THE General Chemical Division, Allied Chemical & Dye Corp., New York, has announced that, due to improvements in plant manufacturing facilities and processes, its weed-killer formulas 7, 7B and 7B-D are now available in higher concentrations. Formula

7 is a compound of aromatic oils containing 5 lb. of trichloroacetic acid per gallon. Formula 7B contains 5 lb. of TCA per gallon of aromatic oils, plus ¾ lb. of pentachlorophenol per gallon. Formula 7B-D is similar in composition to formula 7B, but with the addition of 3/10 lb. of 2,4-D per gallon.

## DEVELOPS POWER SCYTHE

HOFFCO, Inc., Richmond, Ind., has perfected a power-driven scythe which is said to enable the operator, who carries the machine by shoulder straps, to cut weeds four times as fast as with a hand scythe. Designated the Scythette, this tool is designed particularly for working in close quarters, such as under bridges, around buildings, rocks and posts of right-of-way fences and signs.

The machine cuts a swath 20 in. wide. It consists of an air-cooled



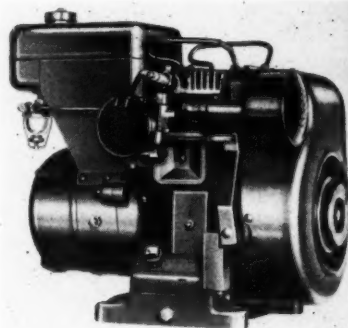
The Scythette is designed for cutting weeds in difficult locations.

gasoline engine, a tube handle, a cutting head with blades, and a driving mechanism. The engine is a 1¼-hp. two-cycle unit, lubricated by a gas-oil mixture. Ignition is furnished by a flywheel-type magneto, started by a rope pull, and a lever is provided for the adjustments of the spark.

The handle is an aluminum tube, 54 in. long, housing within it a steel torque drive tube which, by means of helical gears, activates the blades of the cutting head. The cutting blades are 2 in. wide and 20 in. long, made from precision-ground tempered steel. Two skids, mounted one at each end under the cutting head, permit close trimming.

## ONAN PORTABLE ELECTRIC PLANT

DESIGNED for applications needing a portable source of electric power, a new 400-watt, 60-cycle, (Continued on page 382)



The Onan Model O4AH electric plant which will operate 5 hr. on a single gallon of gasoline





**The Advanced Type Wootings Anchor**

THE WORLD'S MOST  
**POWERFUL**  
RAIL ANCHOR

**WOODINGS FORGE & TOOL CO.**

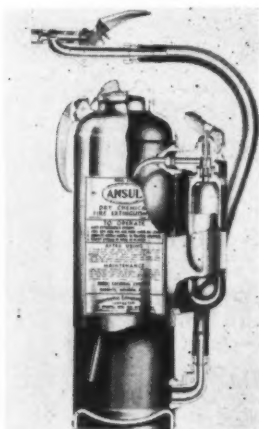
**VERONA, PA. • CHICAGO, ILL.**

For additional information on any of the products described on this page, use postcards, page 323.

a-c electric generating plant, designated as Model O4AH, which will operate for 5 hr. on a single gallon of gasoline has been developed by D. W. Onan & Sons, Inc., Minneapolis, Minn. The unit is only 19 in. long, 14¼ in. wide and 16¼ in. high. The prime mover is an air-cooled Onan engine with extra-large bearings, sturdy rod and crankshaft, and a large capacity crankcase. The new plant is available with either manual or remote-control starting.

## IMPROVED FIRE EXTINGUISHER

THE Ansul Chemical Company, Marinette, Wis., has announced the Model B dry-chemical fire extinguisher—a unit which is re-



The Ansul Model B dry-chemical fire extinguisher

ported to be more rugged, dependable and easier to maintain than its predecessor, the Model A, as a result of a number of changes in design. The most important improvement is a water-tight construction. This was accomplished by providing specially-designed seals inside the cartridge and receiver.

Other changes include new threaded hose connections, a new cartridge guard finger grip, and a redesigned carrying handle. The Ansul Model B dry-chemical fire extinguisher is available in 20-lb. and 30-lb. sizes.

## NEW FORMS OF BORASCU

THE Pacific Coast Borax Company, Los Angeles, Cal., has announced that, in addition to Regular Borascu, two new forms of this chemical are now available—Concentrated Borascu and Borascu 44. Borascu is a non-selective weed killer for use in the vicinity

of bridges, buildings, pole lines, switches and other areas where destruction of all types of vegetation is desirable. The new concentrated forms are designed to reduce storage and handling charges. All three forms of the weed killer are reported to be non-toxic, non-corrosive to ferrous metals, and non-flammable.

## What Our Readers Think

### SUGGESTS METHOD OF HELPING INVENTORS

Kansas City, Mo.

TO THE EDITOR:

Having just finished reading, in the March issue of *Railway Engineering and Maintenance*, the article entitled "Why Equipment Builders Get Grey Hair", by Henry H. Talboys, I am prompted to write you this letter. Since your magazine suggested the article, I want to thank you for the service rendered to the railways, the manufacturers and the suppliers.

Mr. Talboys wrote an article which has long needed publication. Every M/W man and every man in the supply trade recognize the conditions so clearly outlined by him as a result of his long experience. Maintenance - of - way men, along with the suppliers, have a real problem, the seriousness of which is registered in the financial departments of the railways.

It is not enough for M/W men to recognize the value of new and improved devices and equipment and request their use as a means of reducing expenditures in their departments. Such men frequently express a keen desire for these things, but are unable to get authority to purchase them. This is especially true on the larger roads.

I think it would be a good idea for your magazine to run a series of articles along these lines written by top M/W men, but published anonymously. It is difficult to predict just which group would benefit most from such articles—M/W men, the railways in general, or supply men. It is certain that these groups depend on each other, but the railways are the most important. They must earn a profit in order to support their respective departments as well as

the railway supply men and manufacturers.

We do not know to what extent "top brass" recognizes this condition but certainly it is more pronounced than they realize, or something would be done about it. To offer an example: About 18 months ago the chief engineer of one of the largest railways told me that he has long wondered what could be done to encourage men and manufacturers to develop new devices and machines, because it is so difficult to get them in use when developed. Some men hesitate to make the effort because it takes so much money to "ride" through an established period of waiting for the railways to use such things in quantity.

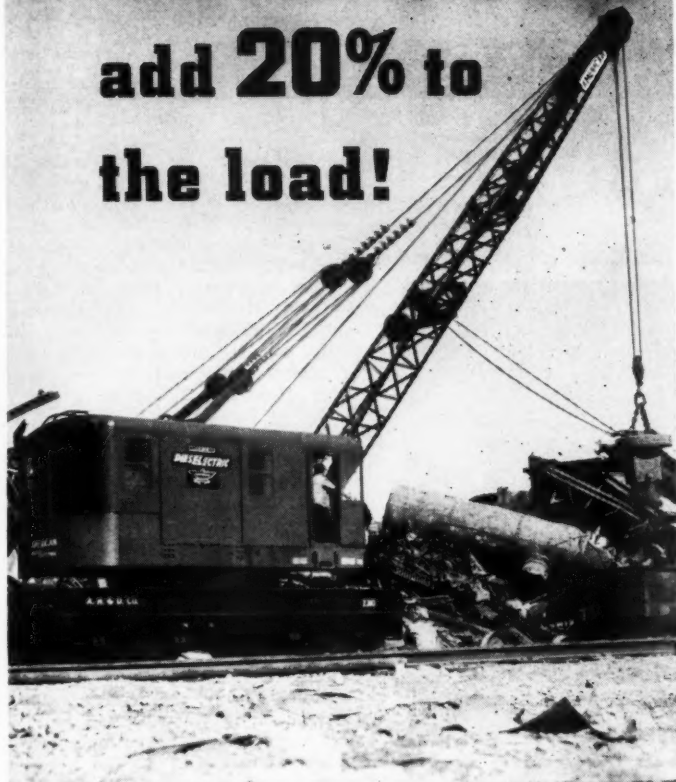
This same man told me this is so important to the railways that he has often thought it would be profitable for each road to contribute an amount of money, in proportion to its size, to help finance the development of new devices. It was his idea that perhaps an A.R.E.A. committee could be established to pass on the merits of new things. The fund would then be used to insure that the inventors or developers would be able to keep their companies alive and to improve their products during the long period before the devices are used in large quantity. This is a broad statement to come from one of the top railway engineers in the country. It should emphasize the reluctance of many concerns to embark on an expensive development program of new and needed machinery and equipment. It should also emphasize that leading engineers consider the railways to be the big losers as a result of the present situation.

C. J. HUNNICUTT

Vice-President

G & H Rail Controls, Inc.

**Push the button...  
add 20% to  
the load!**

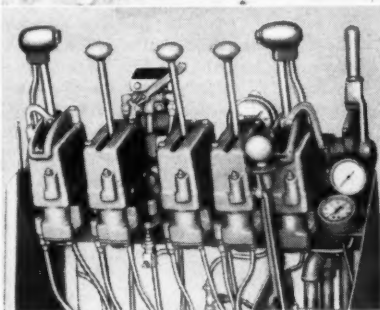


**Side by side**, two locomotive cranes loaded scrap at one of the big steel mills. Each made exactly the same number of passes with the same size magnet. Then the scrap was weighed . . . and the new American crane had moved 20% more material, by weight, than an older crane of the same rated capacity.

The difference? *Over-excitation* . . . an instantaneous extra shot of power to the magnet, which then lifts and holds with the same force as though magnet size were increased by 20%!

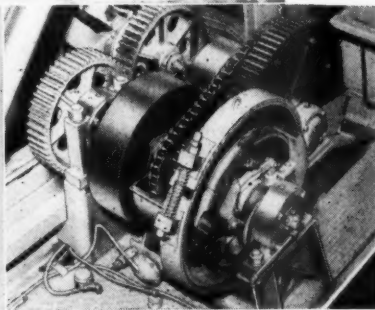
This great feature is yours on any American Locomotive Crane—all capacities. Your choice of power—including the great new DiesELelectric. Want more facts? Mail the coupon for illustrated catalog.

★ Diesel-Electric Locomotive Crane Patent No. 2083460.  
Touch Control Patent No. 2370856.



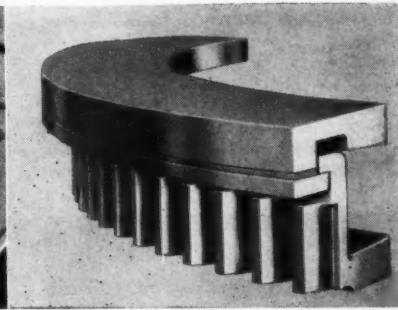
#### Push Button Controls . . .

On hoist and slewing levers, make easy, effortless magnet work. For over-excitation, just hold pick-up button an instant. To unload, push the other button. No need to ever take hands off main control levers.



#### Patented Boom Hoist

Maximum flexibility due to ability to raise or lower boom while hoisting, swinging or traveling. Boom can be raised from maximum to minimum radius in less than a minute. Photo shows unit with gear cover removed.



#### Interlocking Gib Ring

has done away with weak, unstable center king pin on all American cranes. Eliminates rocking, teetering, tipping. Distributes weight of machinery and load on a fully-enclosed 9-foot roller bearing.

## American Hoist & DERRICK COMPANY St. Paul 1, Minnesota

Plant No. 2: SO. KEARNY, N.J.

Sales Offices:

NEW YORK • PITTSBURGH • CHICAGO

American Hoist & Derrick Company 31  
St. Paul 1, Minnesota 5601

● Please send catalog on American Locomotive Crane.

Capacity \_\_\_\_\_ tons. Type of work: \_\_\_\_\_

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# THE MONTH'S NEWS

Happenings among the railways — the associations — the suppliers



## Editorial Staff Changes Follow Howard Appointment with A.R.E.A.

Merwin H. Dick, managing editor of *Railway Engineering and Maintenance*, has been appointed editor, with headquarters as before at Chicago, to succeed Neal D. Howard, who resigned from this position and as western editor of *Railway Age*, effective April 1, to become secretary of the American Railway Engineering Association, succeeding Walter S. Lacher, who has retired. William H. Schmidt, transportation editor of *Railway Age*, has been appointed western editor of that publication, with headquarters as before at Chicago. In addition to editor of *Railway Engineering and Maintenance*, Mr. Dick will continue as engineering editor of *Railway Age*.

Mr. Dick was born on August 19, 1906, at Newton, Kan., and was educated at the University of Kansas, graduating in 1928 with a Bachelor of Science degree in civil engineering. He entered railway service in 1924 as a chainman on the staff of the division engineer of the Atchison, Topeka & Santa Fe at Newton, and during ensuing summer vacations he served as a chainman and rodman at this point, at Arkansas City, Kan., and at Chanute, Kan. After graduation he returned to this company as a rodman, which posi-



Merwin H. Dick

tion he held until October, 1929, when he resigned to go with the Simmons-Boardman Publishing Corporation as associate editor of *Railway Age* and of *Railway Engineering and Maintenance*, with headquarters at Chicago. In 1938 he was promoted to eastern editor of

*Railway Engineering and Maintenance* and eastern engineering editor of *Railway Age*, with headquarters at New York. In 1944, Mr. Dick returned to Chicago as managing editor of *Railway Engineering and Maintenance* and western engineering editor of *Railway Age*. In 1946 he was made engineering editor of *Railway Age* and continued in this capacity, and as managing editor of *Maintenance*, until his promotion.

Mr. Howard was born at Rochester, N. Y., on December 23, 1898, and received his higher education at Rensselaer Polytechnic Institute, from which he was graduated in 1922 with the degree of Civil Engineering. Immediately following graduation, he entered the service of the Illinois Central on its St. Louis division, as a chainman, with headquarters at Carbondale, Ill., and on June 4, 1923, he was promoted to rodman, with the same headquarters. During his service on the Illinois Central, which extended until August 15, 1924, Mr. Howard was engaged in both construction and maintenance of way work, and made many performance studies of gang organizations and of units of work equipment. On the latter date he left the road to become associate editor of the 1926 edition of the *Railway Engineering and Maintenance* Cyclopedic, published by the Simmons-Boardman Publishing Corporation, with headquarters at Chicago, and in August, 1926, he was appointed eastern engin-

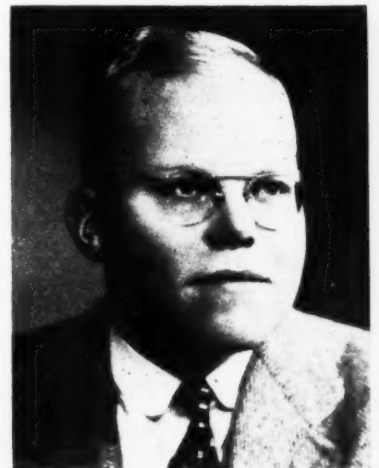
(Continued on page 386)



Neal D. Howard



Walter S. Lacher



William H. Schmidt

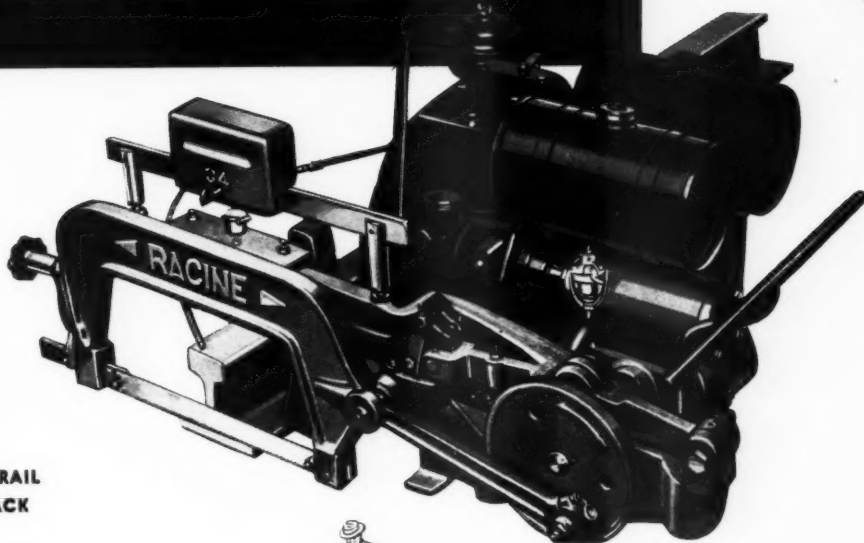


**YOUR EXTRA EMPLOYEE THAT WORKS WITHOUT PAY**

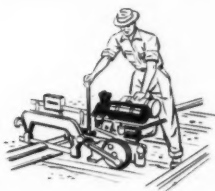
# RACINE

## *Portable*

# RAIL SAW



- CROP RAIL IN TRACK
- WILL NOT SHATTER OR BURN RAIL ENDS
- CUT OFF ANY LENGTH DOWN TO 1/10"
- NO TRAFFIC INTERFERENCE



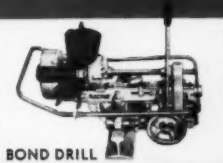
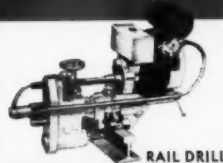
One man operates the RACINE Portable Rail Saw while it does the work of several hands. Designed specifically for cutting rail in track, it handles the job fast and dependably.

Cuts are smooth and accurate. Shattered and burned rail ends are eliminated. The possibility of rail failures from fractures that start with torch cutting or "nick and break" cropping is reduced.

Easily moved by two men, it does not hamper traffic. Operation is simple. Maintenance cost is low. Here is an "extra employee" you can rely upon for steady output under all conditions.

Write for new, 3-color catalog describing RACINE Railway Maintenance Machines.

OTHER  
RACINE PORTABLE  
MACHINES



# RACINE

**TOOL AND MACHINE COMPANY**  
1738 State Street • Racine, Wisc.



engineering editor of *Railway Age* and eastern editor of *Railway Engineering and Maintenance*, at New York, where he was located until March, 1938, when he was promoted to managing editor of *Maintenance* and engineering editor of *Railway Age*, with headquarters at Chicago. In 1944 Mr. Howard was further promoted to editor of *Maintenance*; in 1946 he became also western editor of *Railway Age*; and in 1948 he became, in addition, editor of the *Railway Engineering and Maintenance* *Cyclopedia*.

Mr. Lacher was born at Winona, Minn., on April 7, 1884, and was graduated from the University of Wisconsin in 1907 with a Bachelor of Science degree in civil engineering. He first entered railway service in July, 1905, as a rodman on the Chicago & Alton (now part of the Gulf, Mobile & Ohio), and served subsequently as an instrumentman and field draftsman on construction. From July, 1907, to July, 1908, he served as assistant engineer in maintenance and construction on the same road, and from the latter date until January, 1909, he was connected with the Illinois Highway Commission as a designer of bridges. At the end of this period Mr. Lacher entered the service of the Chicago, Milwaukee & St. Paul (now the C. M. St. P. & P.) as

an engineer draftsman in the bridge department, subsequently becoming office engineer in bridge design. In May, 1915, he joined the staff of *Railway Age* as assistant engineering editor, becoming western engineering editor a year later. In June, 1916, he was appointed also associate editor of the *Railway Maintenance Engineer* (now *Railway Engineering and Maintenance*), and in 1917 he was promoted to managing editor. In 1931 Mr. Lacher was appointed also engineering editor of *Railway Age*. He has served as secretary of the American Railway Engineering Association since 1938.

Mr. Schmidt was born on June 28, 1914, at Jersey City, N. J., and received his higher education at Rutgers University, from which he graduated with an A.B. degree in 1936. During the summer vacation of that year he served as a laborer in the maintenance department of the Chicago, Milwaukee, St. Paul & Pacific. From 1935 to 1937 he was an instructor in English and in public speaking at Rutgers University. Mr. Schmidt entered the service of *Railway Age* in 1937 as associate editor. In 1942 he entered the army, serving with the Quartermaster and Transportation Corps, and rising to the rank of major. In 1946 he returned to *Railway Age* as transportation editor.

September, 1930, he served as resident engineer with the Rock Island, subsequently holding a similar position on the F.W.&D.C. until May, 1933. He became



William B. Throckmorton

an instrumentman on the Rock Island in 1937, and a year later was appointed resident engineer. Mr. Throckmorton was advanced to system locating engineer in February, 1940.

Walter E. Heimerdinger, engineer of bridges of the Chicago, Rock Island & Pacific, whose promotion to assistant chief engineer, with headquarters at Chicago, was announced in the February issue, was born at Vulcan, Mich., on February 12, 1889, and attended high school at Menominee, Mich., and the University of Michigan. Before entering the university, he was employed during 1908 and 1909 as timekeeper-clerk on power plant construction. His railroad service began in 1911 as assistant on the engineering corps of the



Walter E. Heimerdinger

Rock Island. He subsequently held positions successively as building inspector, instrumentman, engineer on construction work, instrumentman and assistant engineer until 1917, when he joined the United States Army. Following service as lieutenant in the field artillery in France, he returned to the Rock Island. From 1919 to 1948, he served successively as assistant engineer, office engineer

(Continued on page 389)

## Changes in Railway Personnel

### General

Victor E. Williams, bridge and building supervisor on the Southern at Wilton, Ala., has been appointed assistant trainmaster, with headquarters at Selma, Ala.

J. N. Fenno, roadmaster on the Chicago, Rock Island & Pacific, with headquarters at Amarillo, Tex., has been promoted to trainmaster at El Reno, Okla.

J. W. Hale, assistant to the chief engineer of the Atlantic Coast Line, has been appointed assistant to the general manager with headquarters as before at Wilmington, N. C., effective March 1.

J. N. Fraine, general manager of the Quebec Central, a subsidiary of the Canadian Pacific, at Sherbrooke, Que., and an engineer by training and experience, has been appointed assistant to the vice-president of the C.P.R., with headquarters at Montreal, Que.

### Engineering

Frederick A. Jones, division engineer on the Missouri Pacific, with headquarters at Monroe, La., has retired after 43 years of service.

John G. Fry, roadmaster on the Atchison, Topeka & Santa Fe at Arkansas City, Kan., has been promoted to division

engineer of the Southern division of the Gulf, Colorado & Santa Fe, with headquarters at Temple, Tex.

Charles F. Fauntz, assistant engineer on the Illinois Central, with headquarters at Chicago, has retired after 44 years of service on that road.

T. A. Blair, chief engineer of the Atchison, Topeka & Santa Fe, Chicago, has been elected also chief engineer of the Illinois Northern, which has been purchased from the International Harvester Company by the Santa Fe, the Chicago, Burlington & Quincy, the Pennsylvania and the New York Central.

B. J. Ornburn, engineer and superintendent bridges and buildings—system, of the Chicago, Milwaukee, St. Paul & Pacific at Chicago, has been appointed assistant chief engineer—structures, with the same headquarters. E. E. Burch, assistant bridge engineer at Chicago, has been advanced to bridge engineer.

William B. Throckmorton, system locating engineer of the Chicago, Rock Island & Pacific, who has been promoted to chief engineer with headquarters at Chicago, as noted in the February issue, was born at Salt Lake City, Utah, on May 9, 1906, and received his higher education at the Colorado School of Mines. He entered railroad service with the Fort Worth & Denver City (part of the Burlington Lines) in December, 1927, as an instrumentman. From January to

# A Big New MONEY-SAVER For Railroads— READE'S BRUSH KILLING CHEMICALS

The cost of mowing and of brush removal of recent years has moved to levels that now stand out as one of the big items of right-of-way maintenance.

Slowly but surely over a long period of years railroads have become conscious of the benefits that weed killing chemicals contribute to the control of vegetation.

With labor costs mounting each year, it has not been surprising to see maintenance men turn to the use of chemical to reduce costs and do a better job in brush control work.

Obviously, brush control is a new field for all of us—both railroads and chemical companies. Much must be learned—in particular, as to ways and means of distributing these new brush killing chemicals.

Equally clear is the fact that an organization such as ours with over 50 years of broad experience in track maintenance work, have the type of experience necessary to make the most rapid progress in this new field.

We have done all of the research work necessary to assure delivery to railroads of brush killing chemical that is dependable and safe to use. With the co-operation of railroads, we are sure to develop the type of equipment and the technique necessary to assure economical distribution of chemical brush killer.

*May We Be Of Assistance To You In Working Out Your Brush Killing Program?*

## READE MANUFACTURING COMPANY, INC.

Executive Headquarters

135 Hoboken Avenue  
Jersey City 2, N. J.

Service Headquarters

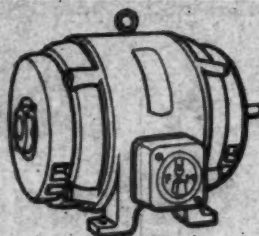
9500 Cottage Grove Avenue  
Chicago 28, Illinois

PLANTS IN NUMEROUS  
RAILROAD CENTERS

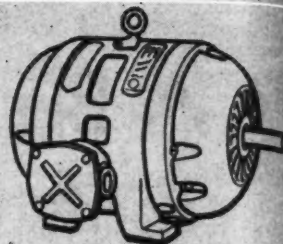




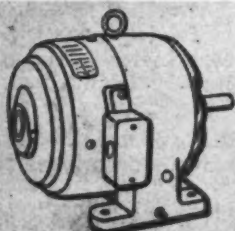
Vertical Motors



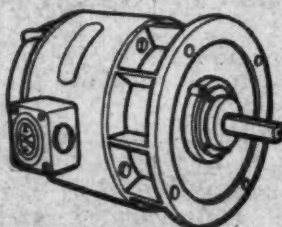
General-Purpose Ball-Bearing Motors



Explosion-Proof Motors



Motorgears



Flange-Mounted Motors



Totally Enclosed Fan Cooled

**when it comes to Motors...**

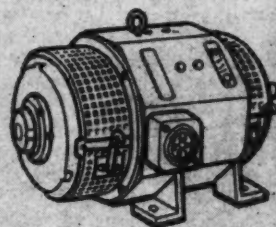
You stand to gain much in dealing with your Fairbanks-Morse Branch or Dealer as the single source for *all* your electric motor requirements. Not the least are the benefits of undivided responsibility, unprejudiced advice and application assistance. For your copy of the handy "Pocket Panorama" which illustrates the complete line . . . write Fairbanks, Morse & Co., Chicago 5, Illinois.



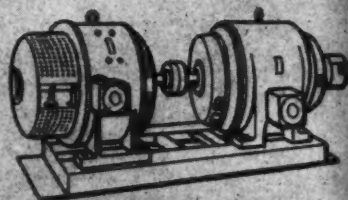
**FAIRBANKS-MORSE**

**A name worth remembering**

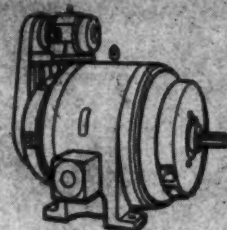
DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS  
STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS



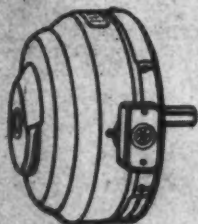
D.C. Motors



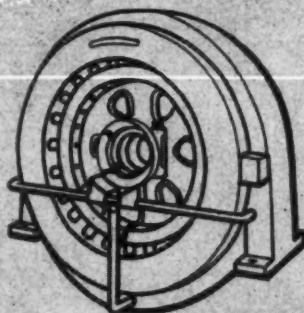
Motor Generator Sets



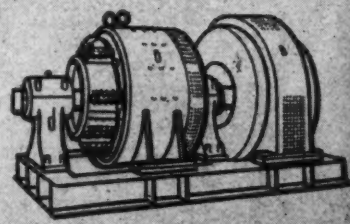
High-Speed A.C. Generators



Axial Air Gap Motors



Low-Speed A.C. Generators



Frequency Changer



## Railway Personnel (Cont'd)

eer, resident engineer, roadmaster, division engineer, locating engineer, district maintenance engineer, division superintendent, and acting assistant chief engineer. Mr. Heimerdinger was appointed engineer of bridges at Chicago in 1948.

J. F. Marsh, whose appointment as bridge engineer of the Chicago, Rock Island & Pacific, with headquarters



J. F. Marsh

at Chicago, was reported in the February issue, was born on July 15, 1906, at Des Moines, Iowa. He graduated from Iowa State College in 1928, and subsequently served as an engineer with the Chicago Bridge & Iron Co. In 1932 he became employed as structural engineer with the Marsh Engineering Company at Des Moines. He joined the Rock Island in October, 1935, and served as assistant bridge engineer from 1945 until his recent promotion to bridge engineer.

James T. Fitzgerald, whose appointment as engineer maintenance of the Chicago, Rock Island & Pacific, with



James T. Fitzgerald

headquarters at Chicago, was reported in the February issue, was born on November 16, 1895, at Wyandotte, Kan., and was graduated from Des Moines high school in 1914. In the same year  
(Continued on page 390)

From Car Parts to Bridges

# RUST-OLEUM

## *Stops Rust!*

Above: Applying Rust-Oleum to car parts by dipping—a practical, economical method for volume application. Rust-Oleum can also be sprayed or brushed on.

At left: Rust-Oleum is ideal for bridge protection. It is highly resistant to heat, fumes, brine, stock car drippings and other damaging elements.

Cut maintenance costs due to rust losses. Railroads across the nation find RUST-OLEUM the perfect answer to their most difficult rust problems. *It stops and prevents rust—easily, positively, economically.*

### FOR RAILROAD USE

RUST-OLEUM, an exclusive-type coating, was formulated to combat the most destructive rust-producing conditions. It provides *lasting protection* for rolling stock, bridges, tanks, metal buildings, signal equipment and other valuable railroad properties.

Unlike ordinary materials, RUST-OLEUM can be applied over metal that is already rusted . . . It's equally effective on new metal.

### QUICK, EASY PREPARATION

Application time is cut to a minimum. No chemical cleaners or sandblasting are necessary. Merely wirebrush quickly to remove rust scale, paint blisters, dirt, etc. Substantial maintenance savings are easily made . . . and RUST-OLEUM *protects longer*.

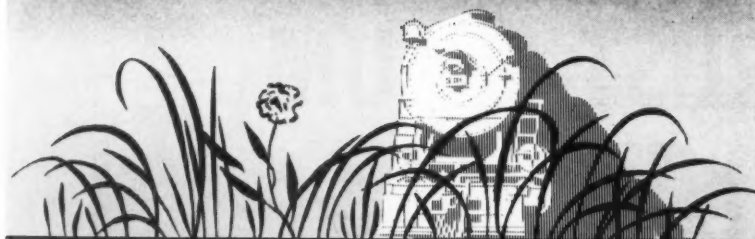
To stop your rust losses, check the advantages of RUST-OLEUM and specify it for new equipment, for re-building jobs and for maintenance—in the shop and out on the right-of-way. Tell us your rust problems and write for full information and recommended applications.



## RUST-OLEUM CORPORATION

2584 Oakton Street • Evanston, Illinois

## Solves "On-Track" Weed Problems



# Polybor-Chlorate

**NON FIRE-HAZARDOUS!**

It's the "Green Light" all the way when Polybor-Chlorate is used for road-bed and right-of-way weed problems! Save precious man-hours . . . meet the challenge of the 40-hour week by using this chemical to destroy weeds and grasses. Polybor-Chlorate, the safe, non-flammable chemical kills not only the "easy-to-control" vegetation but also destroys most weeds and grasses which are resistant to some other chemicals. Results on road-beds and right-of-ways are truly amazing! Investigate! We'll be glad to demonstrate P-C on YOUR line under YOUR conditions . . . without charge or obligation, of course.

Weed Control Dept. Representatives located in the following cities: CHICAGO • NEW YORK CITY • SEATTLE • PORTLAND, ORE. • CLEVELAND, OHIO • AUBURN, ALA. • MANHATTAN, KAN. • HOUSTON, TEX. • DALLAS, TEX. • SIOUX CITY, IOWA • BOZEMAN, MONT. • MINNEAPOLIS, MINN. • LOS ANGELES • SAN FRANCISCO

## PACIFIC COAST BORAX CO.

DIVISION OF BORAX CONSOLIDATED, LIMITED  
510 WEST SIXTH STREET • LOS ANGELES 14, CALIFORNIA

## Railway Personnel (Cont'd)

he began his career with the Rock Island as a chainman at Des Moines. He later held the positions successively of carpenter, chainman, and rodman at Des Moines, and carpenter at Herington, Kan. In 1921 he became instrumentman on the Kansas division, serving as resident engineer at Amarillo, Tex., and on the Missouri-Kansas division, from 1926 to 1929. Later, he was advanced to division engineer, St. Louis-Kansas City division, and in 1932 was appointed assistant engineer, Southern division. After serving as roadmaster on the Kansas City-St. Louis division in 1939, he was made division engineer at Kansas City, and later became resident construction engineer at that point on the construction of the company's new Armourdale yard, completed in 1949. He subsequently held a similar position at Silvis, Ill.

Francis W. Tomlinson, Jr., engineer inspector on the Union Pacific, with headquarters at Hermiston, Ore., has been promoted to assistant engineer with the same headquarters, in which capacity he will have duties in connection with the relocation of a portion of the Union Pacific's Spokane-Portland main line as a result of the construction of a government dam in the Columbia river.

John McClure Salmon, Jr., whose appointment as chief engineer of the Clinchfield, with headquarters at Erwin, Tenn., was reported in the February issue, was born at St. Louis, Mo., on December 10, 1903. Mr. Salmon received his B.S. degree in civil engineering from Purdue University in 1925. While attending school he worked summers for the Louisville & Nashville, and in April, 1926, he entered the valuation engineer's office of the L. & N. at Louisville, Ky., serving as draftsman and estimator there until 1930. Subsequently, he held positions in the bridge engineer's office at Louisville as draftsman, detailer and designer, and in 1938 was appointed assistant supervisor of bridges and buildings, Louisville division, at Louisville. He was made assistant division engineer, Cumberland Valley division, at Middlesboro, Ky., in March, 1941, and was advanced to assistant system bridge inspector in October, 1943. Mr. Salmon held the latter post at the time of his recent appointment on the Clinchfield.

## Track

J. Belki has been appointed roadmaster on the Hornepayne division of the Canadian National, with headquarters at Hornepayne, Ont., succeeding A. E. Kuusisto, who has been transferred to Nipigon, Ont.

H. D. Norris, section foreman on the Chicago, Rock Island & Pacific, has been promoted to acting roadmaster with headquarters as before at Amarillo,

Tex., succeeding **C. M. Berry**, who has been transferred with the same headquarters. Mr. Berry succeeds **J. N. Fenno**, whose appointment as trainmaster at El Reno, Okla., is noted elsewhere in these columns.

**D. A. Sutherland**, supervisor of track on the Atlantic division of the Pennsylvania at Camden, N. J., has been assigned to special duty in the office of the comptroller, Philadelphia, Pa., replacing **T. C. Netherton**, who has been appointed supervisor of track at Reading, Pa., Mr. Netherton replaces **R. H. Smith, Jr.**, who in turn, has been transferred to Camden to succeed Mr. Sutherland.

**E. S. Bell, Jr.**, junior engineer on the Eastern division of the Pennsylvania, has been promoted to assistant supervisor of track, with headquarters at Aspinwall, Pa., succeeding **W. S. Marshall**, who has been transferred to Lancaster, Pa. Mr. Marshall succeeds **Allan Cywin** who has resigned.

**Paul A. Perkins**, assistant track supervisor on the Southern at Athena, Tenn., has been promoted to track supervisor at Sylva, N. C. **Dennis L. Belk**, extra gang foreman on the Knoxville division, has been advanced to assistant track supervisor at Atlanta, Ga.

**E. R. Moran**, roadmaster on the Denver and Rio Grande Western at Helper, Utah, has been promoted to roadmaster-assistant trainmaster on the Alamosa division, with headquarters at Gunnison, Colo. **H. V. Meek** has been appointed roadmaster at Pueblo, Colo., to succeed **C. R. Alberts**, who has been transferred to Salt Lake City, Utah, to replace **W. R. Thomson**. Mr. Thomson has been transferred to Helper to succeed Mr. Moran.

### Bridge and Building

**William L. Hoffman**, track supervisor on the Southern at Parrish, Ala., has been appointed bridge and building supervisor at Wilton, Ala., succeeding **V. E. Williams**, whose appointment as assistant trainmaster is noted elsewhere in these columns. **Edward H. Cook**, resident engineer at Chattanooga, Tenn., has been appointed bridge and building supervisor at Bristol, Va.

**Grover C. Edwards**, master carpenter of the New York division of the Erie, with headquarters at Paterson, N. J., retired on February 28 after 46 years of service with this road.

**G. A. Allen**, assistant supervisor of bridges and buildings of the Chesapeake & Ohio at Clifton Forge, Va., has been advanced to supervisor of bridges and buildings on the Hocking division at Columbus, Ohio, succeeding **J. H. Brandt**, who has retired after 42 years' service. **J. D. Ferguson** has been appointed assistant supervisor of bridges and buildings at Clifton Forge to succeed Mr. Allen.

(Please turn to page 392)



**Why take a  
wood preservative  
to LUNCH?**

Gone is the day when workmen handling treated wood—poles or lumber—couldn't avoid getting sticky and dirty. Today the *clean* Penta Preservative treatment means no messiness to stick to clothes and maybe skin. That's the big reason workmen are asking for Penta protection of the wood they have to handle. Penta Preservative just doesn't leave any stickiness.

And for protection value, you can't beat Penta Preservative. No other commercially used preservative, by any kind of test, has ever proved superior to Penta Preservative in withstanding insects and decay. Most important, protection with Penta is *sure*. The chemical make-up of pentachlorophenol cannot vary; the Penta of today cannot fail to give the same outstanding protection as the Penta of years ago.

Why not give your workmen the extra benefit that Penta Preservative provides? It helps labor relations and costs no more than other standard preservative treatments. We'll be glad to give you full information on Penta Preservative. Just ask for it.

**CHAPMAN CHEMICAL COMPANY**  
772 DERMON BUILDING • MEMPHIS 3, TENNESSEE




## Railway Personnel (Cont'd)

### Obituary

C. M. Burgess, retired chief draftsman in the engineering department of the Erie at Cleveland, Ohio, died on February 6 at his home in Lakewood, Ohio.

C. A. Anderson, roadmaster at Nipigon, Ont., on the Hornepayne division of the Canadian National, died recently.

Frank A. Howard, retired engineer of structures of the Erie, died recently at the age of 77 years.

Charles A. Knowles, retired assistant to vice-president of the Chesapeake & Ohio, died at Richmond, Va., on January 31, at the age of 68 years. Mr.

Knowles joined the C. & O. in 1921 as valuation engineer after previous engineering work with other railroads, the United Fruit Company in Central America and the Interstate Commerce Commission. He retired in 1949.

Frank T. Darrow, who retired as chief engineer of the Chicago, Burlington & Quincy at Chicago in January, 1943, died on February 27 at his home in Riverside, Ill., at the age of 74 years.

William K. Wyatt, construction engineer of the Reading at Philadelphia, Pa., died at Elm Terrace Hospital, Lansdale, Pa., on January 14 after a brief illness. At the time of his death he was 60 years of age and had served for 40 years in the engineering department of the Reading.



## RAIN OR SHINE THESE UMBRELLAS STAY UP



THESE UMBRELLA SHEDS at the Houston, Texas, passenger station of the Southern Pacific Lines have been sixteen years in service. The roof decking is constructed of WOLMANIZED pressure-treated lumber (150,000 board feet . . . 2 x 6 tongue and grooved dimension). Despite exposure to the weather and resulting decay the treated wood remains as sound today as it was when first installed in 1934. In addition to durability WOLMANIZED lumber has cleanliness and paintability which are so important for good appearance, especially in a passenger station. In these sheds

aluminum paint has been used to keep the roof under-surface bright and clean. SERVICE RECORDS, the only reliable gauge of testing wood preservatives, have been kept on WOLMANIZED treated materials for 25 years. Case histories are available on more than 34,000,000 feet used in the United States during this period. For a copy of the "Service Record" booklet write to address below.

**American Lumber & Treating Co.**  
1692 McCormick Building • Chicago 4, Illinois



## Association News

### Roadmasters Association

Taking advantage of the presence in Chicago of many of the officers of the association to attend the A.R.E.A. convention, a meeting of the Executive committee of the association was held at the Engineers' Club, Chicago, on March 13. Routine business matters were discussed and preliminary plans were made for the annual meeting which is to be held at the Hotel Stevens, Chicago, on September 18-20, concurrently with the annual convention of the American Railway Bridge & Building Association. It is planned to send a news letter to all members sometime in April.

### Bridge & Building Association

On March 13, the day preceeding the convening of the A.R.E.A. Convention, the Executive committee of the Bridge

### Meetings and Conventions

**American Railway Bridge and Building Association**—Annual meeting, September 18-20, 1950, Hotel Stevens, Chicago. Elise LaChance, Secretary, 431 S. Dearborn Street, Chicago 5.

**American Railway Engineering Association**—Annual Meeting, March 13-15, 1951, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

**American Wood-Preservers' Association**—Annual meeting April 25-27, 1950, Rice Hotel, Houston, Tex. H. L. Dawson, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

**Bridge and Building Supply Men's Association**—E. C. Gunther, Secretary, 122 S. Michigan Avenue, Chicago 3.

**Maintenance of Way Club of Chicago**—Next meeting, April 24, 1950. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

**Metropolitan Maintenance of Way Club**—Walter L. Turner, Jr., Secretary, 30 Church street, New York.

**National Railway Appliance Association**—R. B. Fisher, Secretary; Lewis Thomas, assistant, Secretary 59 E. Van Buren street, Chicago 5.

**Railway Tie Association**—Annual meeting, August 28-30, 1950, Brown Hotel, Louisville, Ky., Roy M. Edmonds, Secretary-treasurer, 610 Shell Building, St. Louis 3, Mo.

**Roadmasters' and Maintenance of Way Association of America**—Annual meeting, September 18-20, 1950, Hotel Stevens, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

**Track Supply Association**—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago, 5.



& Building group met at the Engineers' Club, Chicago, to discuss matters of routine business. Among the subjects discussed were the membership drive now under way, plans for entertainment for the wives of members attending the convention in September, to be held at the Stevens Hotel, Chicago, September 18-20, the possible use of a new type of identification badge for those registering at the convention, and the progress that has been made in publishing the Proceedings for the 1949 meeting. It is planned to send out a news letter to all members of the association as early as possible in April.

#### Maintenance of Way Club of Chicago

The last meeting of the club was held on March 27 and was addressed by Harvey C. Marmaduke, representative, Executive department, Illinois Central, who spoke on Super-Vision for Super-vision. Mr. Marmaduke's address was illustrated by a considerable number of visual aids—cards 30 in. by 40 in., mounted on an easel and illuminated by a spotlight.

The next meeting—the annual meeting—will be held on April 24 at the usual place—Eitel's restaurant in the Field Building. This meeting will begin with a reception at 6:00 p.m. and dinner will be served at 6:30 p.m. The principal speaker will be H. H. Talboys, vice-president in charge of the Railway Equipment division, Nordberg Manufacturing Company, whose subject will be, "Your Tax Burden and Your Railroad's Tax Burden".

#### Wood-Preservers' Association

Plans have been completed for the annual meeting of the association, which will be held at the Rice hotel, Houston, Tex., on April 25-27. A number of addresses will be presented which will be of particular interest to railway men. These will include one by H. J. McKenzie, chief engineer, Southern Pacific Lines in Texas and Louisiana, on the Use of Pressure Treated Ties—Also Creosoted Timber for Open-deck Packed-Chord Trestles; one by Monie Hudson, research chemist, Taylor-Colquitt Company, on Drying Lumber by the Vapor Process; and one by W. J. Burton, assistant to chief engineer, Missouri Pacific, on Treated Woods on the Missouri Pacific.

#### Track Supply Association;

#### B. & B. Supply Men's Association

Letters went out on March 15 to the member companies of these associations, assigning space in the joint exhibit to be held in September at the Coliseum, Chicago, during the concurrent conventions of the Roadmasters' Association and the American Railway Bridge & Building Association. A total of 101 firms were assigned 231 booths. Only 32 booths remain unassigned on the

(Continued on page 394)

# Preferred



*air-cooled* **POWER**

... There are more Briggs & Stratton air-cooled gasoline engines in service — on farm equipment, industrial machines, tools, and appliances — than all other makes of gasoline engines in their field combined.

No other single-cylinder, 4-cycle, air-cooled engines are so universally preferred by manufacturers, dealers and users alike.

No other engines in their class can match Briggs & Stratton in engineering precision — in dependable performance — long life — service.

**BRIGGS & STRATTON CORPORATION**  
Milwaukee 1, Wis., U.S.A.



## Association News (Cont'd)

main floor, but if necessary additional space can be made available in the Grand Ballroom on the second floor. Officers of the association express themselves as being highly gratified over the response received from manufacturers in connection with plans for the exhibit. Even at this early date a record exhibit is assured.

Arrangements have been completed for special decorations in the exhibit hall, particularly for the north and south halls and it is planned to provide extra lighting for the entire exhibition space.

Additional supply companies interest-

ed in participating in the exhibit should address their requests for information to Lewis Thomas, director of exhibits, 59 East Van Buren street, Chicago.

## American Railway Engineering Association

The forty-ninth annual meeting of the association was held at the Palmer House, Chicago, March 14-16. A highlight story of this meeting, including a list of the newly elected officers and candid photographs of many of the members and guests who attended the meeting, is presented in this issue on pages 362 to 365.

Two technical committees have sched-

uled meetings for April. The Committee on Maintenance of Way Work Equipment will meet at the Selwyn hotel, Charlotte, N. C., April 17-18, and the Committee on Track has scheduled a meeting to be held April 26 at the Engineers' Club, Chicago. On April 25, Vice-President Loeffler will meet with all committee chairmen and with the members of the Board of Direction Committees on Personnel, Outline of Work, Publications, and Manual at the Engineers' Club, Chicago.

## Supply Trade News

### General

L. J. Wing Manufacturing Company has consolidated its three factories at Newark, N. J., and general offices at New York in a single factory building at Vreeland Mills road, Linden, N. J. The office at 154 West 14th street, New York 11, will be maintained to handle New York City sales.

The Howard P. Cook Company, Bridgeport, Conn., and Chicago, has been appointed sales representative in the railroad field for Beaver tractors. These tractors are manufactured by the Beaver Tractor Company, Inc., Stratford, Conn.

The Northeast Industrial Equipment Company, Cambridge, Mass., has been appointed by the Hyster Company, Portland, Ore., to handle sales and service of Hyster lift trucks, straddle trucks, mobile cranes and their attachments, in Maine, New Hampshire, Rhode Island and 10 counties of Massachusetts.

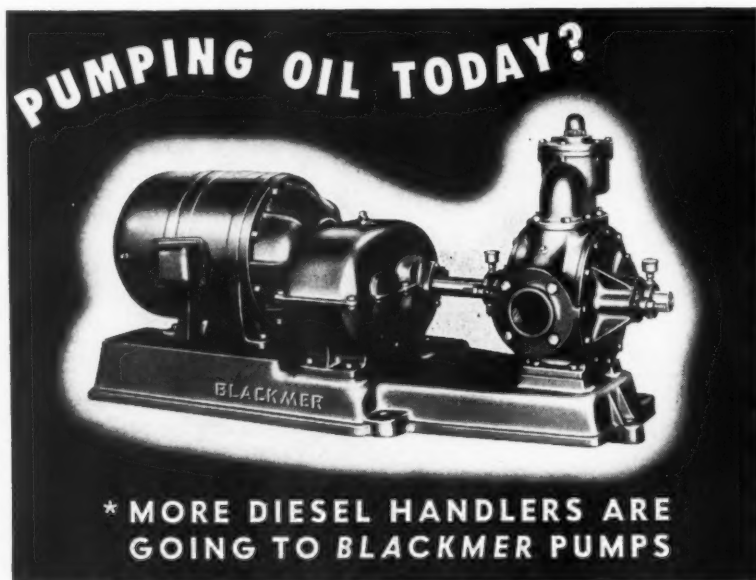
### Personal

McCulloch Motors Corporation, Los Angeles, Cal., has announced the appointment of Glenn W. Malme to its sales department, with headquarters at Los Angeles.

H. H. Morgan, vice-president and chief engineer of the Robert W. Hunt Company, has been appointed also general manager, with headquarters as before at Chicago.

W. N. Young, special engineer on the Baltimore & Ohio, with headquarters at Baltimore, Md., has become chief engineer of the McDowell Company, Inc., with headquarters at Cleveland, Ohio.

Walter M. Steppacher and William G. Vanderpool have joined the sales staff of the Simmons-Boardman Publishing Corporation, publisher of Railway Engineering and Maintenance and other transportation papers. Mr. Steppacher will have headquarters at New York, and Mr. Vanderpool will be located at Chicago.



**PUMPING OIL TODAY?**

**\* MORE DIESEL HANDLERS ARE GOING TO BLACKMER PUMPS**

Railroads, petroleum marketers, industries and power plants install Blackmer Pumps and forget them. Many installations of 20 years or more daily service have had no maintenance except lubrication. These Blackmer Pumps, long "written off," are still on Blackmer records for "service" if parts are ever needed. Blackmer Pumps with capacities from 5 to 1500 G.P.M. for petroleum products and industrial liquids are "self-adjusting for wear." Users learn pumping costs are lower with Blackmer Rotary Pumps. In 1950, since 1905, Blackmer Pump users will show favorable cost reports.

*\*Read Why: Write For Bulletin 307—"FACTS"*



**BLACKMER PUMP COMPANY—GRAND RAPIDS, MICHIGAN**

**A. G. Hendrickson** has been appointed assistant sales manager of the P & H welding division, **Harnischfeger Corporation**, Milwaukee, Wis. Mr. Hendrickson has served as welding engineer in the Milwaukee and Minneapolis, Minn., territories for the past five years.

**John Crow**, formerly vice-president and chief engineer of the **Royce Ker-shaw Company, Inc.**, Montgomery, Ala., has resigned to form his own contracting company. The new firm will be known as the **Crow Engineering Company**, and will have offices at Montgomery.

**Edward J. Littleton** has been appointed manager of railroad sales of the **Jennison-Wright Corporation**. Mr. Littleton began his business career with the Chicago, Milwaukee, St. Paul & Pacific in 1928 as buyer of forest products. He left the Milwaukee in 1940 to enter the wood preserving industry, serving railroads, utilities and industry. He joined Jennison-Wright in September, 1947.

**G. F. Maughmer**, formerly manager of the Los Angeles, Cal., sales office of the **General Electric Company**, has been appointed to head a new apparatus sales district, twelfth in the firm's apparatus department sales system. The new district, with headquarters at St. Louis, Mo., consists of all sales areas presently in the company's St. Louis, Kansas City, Mo., and Omaha, Neb., territories, and includes company offices at Sioux City, Iowa; Lincoln, Neb.; Wichita, Kan.; Springfield, Ill.; Memphis, Tenn.; and Little Rock, Ark.

**M. Russell Kambach**, formerly assistant advertising manager of the **Aluminum Company of America**, has been appointed advertising manager, and **J. M. Sharp**, of the advertising department, has been appointed to succeed him. The company also has appointed **John M. Mitchell** as manager of its export division, with headquarters at Pittsburgh, Pa., and **G. B. D. Peterson** as head of the division's New York office. Mr. Mitchell was formerly in charge of Alcoa sales in Mexico and Mr. Peterson was sales representative in York, Pa. A new division for rolling of magnesium sheet will be established at New Kensington, Pa., in the near future.

**Richard W. Claypoole** has been appointed assistant manager of sales, railroad materials and commercial forgings division of the **Carnegie-Illinois Steel Corporation**, a United States Steel Corporation subsidiary. Mr. Claypoole joined the Duquesne works of Carnegie-Illinois as a metallurgical observer in 1933 and the following year transferred to the Edgar Thomson works in the same capacity. He was appointed chief metallurgist at that plant in 1944, and, in 1946, joined the railroad sales division at Pittsburgh, Pa., as a product representative. In 1947, Mr. Claypoole was appointed assistant to manager, the position he held at the time of his present appointment.

**R. S. Stevenson**, assistant general sales manager of the **Allis-Chalmers Manufacturing Company**, has been appointed general sales manager of the company's Tractor Division, succeeding **Marshall L. Noel** who has resigned to accept a position with another company, as noted elsewhere in these columns.

**Marshall L. Noel**, vice-president of the **Allis-Chalmers Manufacturing Company**, and general sales manager of that company's Tractor Division, has joined the **Tractomotive Corporation**, Deerfield, Ill., as vice-president and treasurer.

**Robert H. Morse, Jr.**, vice-president in charge of operations of **Fairbanks, Morse & Co.**, Chicago, has been elected president, succeeding his father, **Colonel Robert H. Morse**, who becomes chairman of the board.

The **Caterpillar Tractor Company** has announced the appointment of five men in key positions in its new earthmoving equipment plant now under construction at Joliet, Ill. **Hubert D. Boggs**, superintendent of the steel fabrication factory in Peoria, Ill., has been named factory manager at Joliet; **Walter J. Gottschalk**, insurance manager in the industrial relations department at Peoria,

## Proven Weed Killers

for

### SUCCESSFUL WEED CONTROL

#### CHIPMAN CHEMICAL COMPANY, INC.

Chicago • Houston • BOUND BROOK, N. J. • Palo Alto • Portland

Railroad Weed Control Service Since 1912

A COMPLETE LINE OF WEED KILLING CHEMICALS

## Supply Trade News (Cont'd)

will become personnel manager at the new plant; **Robert A. Morgan**, currently manager of office methods and procedures in the accounting department at Peoria, will assume the responsibility of chief accountant at the new plant, **W. G. Schuller**, assistant purchasing agent at Peoria, has been selected as purchasing agent for the Joliet operations; and **Otto F. Wiesemann**, scheduling division manager in the production division of the manufacturing department, will be production division manager at Joliet.

**R. P. Jackson**, vice-president and district manager of the wood preserving division of **Koppers Company**, at Texarkana, Tex., has been appointed Chicago district manager, retaining his position as vice-president in addition to his new duties. Succeeding Mr. Jackson as manager of the Texarkana district is **C. F. Seyer**, formerly sub-district manager at Houston, Tex. **J. W. Sullivan**, sales representative at Houston, succeeds Mr. Seyer. As district managers at Chicago and Texarkana, Messrs. Jackson and Seyer will be in charge of plants, procurement, and sales in those areas.

**Col. N. A. Powell**, railroad sales manager for the Southwestern Division of **Armco Drainage & Metal Products, Inc.**, with headquarters at Houston, Tex., has been transferred to the Headquarters

Division, St. Louis, Mo., with the title of consultant, railroad sales. **W. P. Lipscomb**, assistant railroad sales manager for the Southwestern Division, has been promoted to railroad sales manager at Houston, to succeed Colonel Powell. **J. R. Hursh**, sales engineer in the Pittsburgh district, has been appointed railroad sales manager for the Eastern Division, with headquarters at Baltimore, Md.

**J. Donald Rollins**, planning engineer of the **Carnegie-Illinois Steel Corporation**, with headquarters at Pittsburgh, Pa., has been promoted to assistant chief engineer at that point. **Norman C. Michels**, assistant to the president of a clay products company since 1947, returns to Carnegie-Illinois to succeed Mr. Rollins. Mr. Michels was formerly a special engineer in the corporation's general offices. **Harry C. Hunter**, general supervisor of construction at the Gary steel works, has been appointed contract engineer at Pittsburgh.

**Eugene W. Caruthers** who recently retired as assistant engineer in the office of the chief engineer of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed special engineer to the Reliance Division of the **Eaton Manufacturing Company**, Massillon, Ohio, according to an announcement by E. D. Cowlin, general manager of that division. Mr. Caruthers will be located at Philadelphia. He has



Eugene W. Caruthers

served as assistant engineer on the Pennsylvania for 43 years. Before joining that railroad Mr. Caruthers had seen service with the New York Central, the Norfolk & Western and the Baldwin Locomotive Works. He has been a member of the Track committee of the American Railway Engineering Association for many years, and recently retired as chairman of that committee. He is also a member of the American Society of Mechanical Engineers.

**Phil Norton**, general sales manager of the **Wisconsin Motor Corporation**, Milwaukee, Wis., has been appointed vice-president of that company. He has



We call Burro Cranes "Railroad Specialists" because they do so many railroad jobs so well. Track work, bridge work, bulk materials handling, Mechanical Stores Department, material handling with or without magnet, are only a few jobs Burro does with speed and economy. Burro Cranes are designed for railroad work—not adapted to it. Watch a Burro work and see why it's called on to do so many jobs by most of the country's railroads.

**CULLEN-FRIESTEDT CO.**  
1301 S. Kilbourn Ave., Chicago 23, Ill.

## Rail-Road Specialist

### Only Burro Cranes Have:

- Fast travel speeds—up to 22 M.P.H.
- Draw Bar Pull of 7500 lbs. (often eliminates need for work train or locomotive).
- Elevated Boom Heels for working over high sided gondolas.
- Short tail swing—will not foul adjoining track.
- Low overall height—Burro can be loaded and worked on a standard flat car.

Burro WORK Power  
means more  
EARNING Power



Phil Norton

been connected with the company in a sales capacity for more than twenty years, and has served as sales manager for the past ten years.

## Obituary

**Fred J. Fischer**, who retired recently as a sales representative for **Railway Engineering and Maintenance** and other Simmons-Boardman publications died at New London, N. H., on March 16.

**Frank Speno**, president of the **Frank Speno Railway Ballast Cleaning Company, Inc.**, and inventor of the ballast cleaning machine bearing his name, died at Ithaca, N. Y., on March 1.

(Please turn to page 398)



# TRAXCAVATOR

**OFF-TRACK  
WORKHORSE**

**FOR M., N. & S. RAILROAD**

A T4 TRAXCAVATOR (that easily gets on and off a flat car) is employed by Minneapolis, Northfield and Southern Railroad to build an industrial spur at Richfield Village, Minnesota.

This versatile tractor shovel quickly excavates the new grade, then carries and dumps new sand ballast right where it is needed.

The maneuverable TRAXCAVATOR lays its own "cross-country tracks" that have all weather traction. Powered by a "Caterpillar" Diesel tractor, the TRAXCAVATOR employs the tractor's full drawbar push, to dig and excavate soils as tough as clay and frost!

On railroading, all 5 TRAXCAVATOR Models (1/2 to 4 cubic yards capacity) reduce costs and save men, help "daylight" cuts, clean ditches and culverts, sand stock-cars, remove snow, do many another material moving job. For complete information see your TRACKSON "Caterpillar" Dealer or write TRACKSON Company, Dept. RE-40, Milwaukee 1, Wisconsin.



# TRAXCAVATOR<sup>®</sup>

*The Original Tractor Excavator*



BEALL Hi-Duty SPRING WASHERS are made especially to stand the strain of the heavy-duty rail service required by today's high-speed freight and passenger trains. We control every step of their manufacture — from the specification of the specially-developed formula and process used in making the steel to the forming, hardening, tempering and testing operations. Their dependability has been proven by years of actual service on hundreds of railroads.

BEALL Hi-DUTY SPRING WASHERS, being made especially for railroad service are strong and tough, yet provide the necessary "springing action" required at rail joints, frogs and crossings.

**BEALL TOOL DIVISION**

(HUBBARD & CO.)  
140 Shumrock St., EAST ALTON, ILL.

SPECIALIST MANUFACTURERS OF SPRING WASHERS

*made especially for Railroad Service*

**BEALL**  **Hi-Duty**  
**SPRING WASHERS**



"BETTER MEASURE with LUFKIN"

# SMASH HITS!

NEW! NEW! **LUFKIN**

**MEZURALL and**

**WIZARD JR.**

TAPE-RULES with  
**CHROME-GLAD BLADES**



Now you can get a famous Lufkin Mezurall or Wizard, Jr. steel Tape-Rule with Chrome-Glad non-glare blades . . . the most outstanding development in years! Get longer tape-rule life . . . more accurate measurement . . . a "better buy" in every way with either of these two Newest of All Tape-Rules!

**CHECK THESE OUTSTANDING FEATURES:**

- 1—Exclusive Lufkin Chrome-Glad satin finish blades.
- 2—Black markings stand out sharply against the chrome white background . . . and they are durable.
- 3—Rust and corrosion resistant.
- 4—Will not crack, chip, or peel.
- 5—Self-adjusting hook permits accurate butt-end and hook-over measuring.
- 6—Replaceable blades.
- 7—Smooth manual blade operation.
- 8—Improved heavily plated case—insert side plates in attractive red and white.

**DIAGRAMMATIC CROSS-SECTION VIEW**

1. Hardened Steel Tape.
2. Rust-resistant Coating.
3. Multiple Coats of Electroplating.
4. Hard, Smooth, Non-glare Chrome-plating.
5. Black Markings Bonded to Steel, Sunk below Surface.

Get more accurate measuring—cut your tape-rule costs—specify the **NEW LUFKIN MEZURALL and WIZARD, JR.** on your next order for supplies!

## Buy LUFKIN

TAPES • RULES • PRECISION TOOLS  
**THE LUFKIN RULE CO.** TS-B  
SAGINAW, MICH. • NEW YORK CITY • BARRIE, ONT.

### Trade Publications

(To obtain copies of any of the publications mentioned in these columns, use postcards, page 323)

**American General-Purpose Hoists**—Two new catalogs describing the line of American general-purpose hoists have been published by the American Hoist & Derrick Co. One of these, Catalog No. 100-H-40, covers hoists from 5 hp. to 40 hp., and the other, Catalog No. 100-H-55, covers the units from 50 hp. to 100 hp. Both catalogs are profusely illustrated with operating pictures as well as pictures of mechanical parts and assemblies.

**Willson Products for Industrial Safety**—Willson Products, Inc., has published a 64-page illustrated catalog on its complete line of personal protective devices, including safety goggles and spectacles, face shields, gas masks, respirators, blasting helmets, welding helmets and many others. Selector tables and recommended uses are given for all the items described.

**Masterplate Iron-Clad Concrete Floor**—The Master Builders Company has published a 36-page booklet presenting complete information on the Masterplate concrete floor, which is produced by embedding in the surface of the concrete, while still in a plastic condition, Masterplate metallic aggregate to form an armored surface. The book-

let discusses such qualities of the floor as its resistance to wear, corrosion and frictional sparks, its ability to disseminate static sparks, its non-dusting, non-slip and easy-to-clean features, and its economic advantages.

**Truck-Mounted Shovel Crane**—The Link-Belt Speeder Corporation has announced its Catalog No. 2322, which presents the applications, construction details, special features and specifications of the new HC-51 truck-mounted, 12½-ton shovel-crane with Speed-O-matic hydraulic controls.

**Diesel-Driven Electric Plants**—D. W. Onan & Sons, Inc., has published a four-page, two-color bulletin describing its entire line of Diesel-driven electric generating plants, in all standard voltages, frequencies and phases. Important information concerning parallel operation, automatic controls, optional equipment, and choice of models is included in the bulletin.

**Greenheart Timber**—The Greenheart & Wallaba Timber Co., Inc., is offering a set of bulletins on the use of Greenheart, a strong, durable timber that grows only in British Guiana, for marine and heavy-duty construction. The outstanding characteristics of the timber, particularly its high resistance, without treatment, to marine borers, wood-destroying fungi, and fire, are discussed, and numerous installations are described.

### Cut Maintenance Costs . . .

with a Littleford

# Trail-O-Roller



This highly portable Littleford Trail-O-Roller is the answer to low cost maintenance of Crossings, Platforms and Parking Areas. Being a one man roller that travels behind a maintenance truck, the labor saving will pay for this unit in no time.

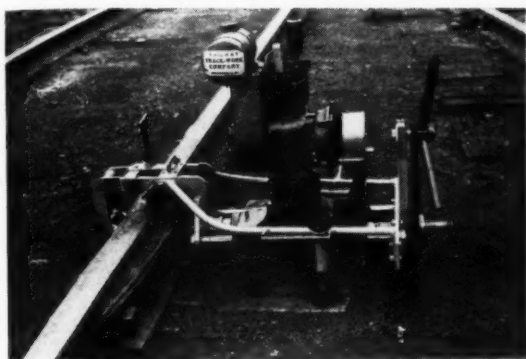
The Trail-O-Roller is small, compact, yet has as much compaction as a 5 ton tandem, in

addition it has a Patented Hydraulic Lift for changing it from the Rolling to Trailing or Trailing to Rolling position. It takes only 2 minutes time to change from one position to another. Dozens of rolling jobs can be done in a single day because the Trail-O-Roller goes right along with the maintenance crew. If you want low cost maintenance work, then you want a Littleford Trail-O-Roller on the job.



471 E. Pearl St., Cincinnati 2, Ohio

## DRILL A HOLE A MINUTE AND *SAVE*



Machine operating outside of track.

## ... with the P-43 Power Track Drill

Yes sir, the P-43 drills holes up to 1½ in. in 60 seconds, but that's not all. Check these economical operating features and you'll agree that the P-43 is bound to cut track costs.

- Perfect alignment for drilling through angle bars or bare rails assured by leveling adjustments on top of rail head and by supporting screws.
- Positive, easily controlled screw feed.
- V-belt drive from 1½-hp air-cooled engine acts as overload release in case drill cramps or sticks.
- Telescopic extension on rail-head bracket permits drilling at switch heels.
- Chuck jaws automatically remain open when loosened for changing bits.
- Extensive use of aluminum casting makes drill light and easy to handle.
- Adjustment provided for tightening V-belts.

Write for full information on the P-43 and other efficient and economical RTW maintenance equipment.

### Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

Distributors for

Burro Cranes  
Dapco Sprayers  
LeRoi Air Compressors

McCulloch Chain Saws  
THOR Electric Tools  
Wayer Impactors

5472R

## Cost-cutting power for on-the-job tools and emergency lights



You'll like the way "U.S." Electric Plants speed the work and trim your costs! Economical to run . . . maintenance costs are low. That's because their design is simple, rugged, trouble-free. The "U.S." line includes all types—over 100 models and hundreds of variations. Write for information.

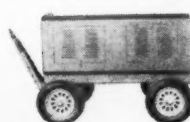
**UNITED STATES MOTORS CORP.**

438 Nebraska St.

Oshkosh, Wis.

Export Division:

212 E. Washington Ave., Madison 3, Wisconsin, U.S.A.





**Precast Concrete Culvert Pipe  
Piling—Cribbing  
Bridge Deck Slabs**

**42 Years of Service to American Railroads**

# MASSEY

## CONCRETE PRODUCTS CO.

111 W. Washington St.  
Chicago 2

New York

Atlanta

Birmingham

Plants: Birmingham, Ala.

Chicago, Ill.

Kansas City, Kans.

Melbourne, Ky.

Minneapolis, Minn.

New Brunswick, N. J.

# SEALTITE

## ESSENTIAL PRODUCTS



**Double-Life FINISH—**  
Sealed in Zinc—Actual service tests reveal distinct economies are effected by specifying Sealtite Essential Products with Double-Life Hot-Dipped, sealed in zinc finish. Corrosion is retarded—

the fasteners have much longer life and expensive replacements are eliminated. Protect your investment—specify Hot-Dipped Galvanized—Sealed in zinc.

**LEWIS BOLT & NUT CO.**  
MINNEAPOLIS, MINNESOTA

**Serving 72% OF AMERICA'S  
CLASS I RAILWAYS**

### CLASSIFIED ADVERTISEMENTS

Use this section when seeking a new man, new position, or when buying or selling secondhand equipment.

### CLASSIFIED ADVERTISEMENTS . . .

\$10.00 an inch, one inch deep by three inches wide, an insertion.

### EMPLOYMENT ADVERTISEMENTS . . .

10 Cents a word a month, including address, minimum charge \$2.00

Remittance must accompany each order.

Railway Engineering and Maintenance  
Classified Advertising Department  
79 W. Monroe St., Chicago 3

### A REAL POSITION IS AVAILABLE TO YOU

If you have 5 - 10 years RAILWAY RIGHT OF WAY MAINTENANCE experience and civil engineering background. A good old line company has an excellent technical service position open for you.

### — CONTACT —

J. A. GOTTSCHALK  
CADILLAC EMPLOYMENT AGENCY, INC.  
220 South State Street,  
Chicago 4, Illinois  
WAbash 2-4800



## Look to VIKING

To Help You With Your  
**PUMPING  
PROBLEMS**

Do you have a question concerning the type of pump needed and how best to install it for greatest efficiency? Viking is equipped to give you this information and to make recommendations from the most complete line of rotary pumps in the world.

The facilities of Viking are at your disposal for your expansion, new design, replacement or service problems.

The complete, nation-wide sales and service organization is also ready to lend a helping hand. Write today for latest free folder 50SY. There's no obligation, of course.



See Our  
Catalog in  
SWEETS

**Viking** PUMP COMPANY  
Cedar Falls, Iowa

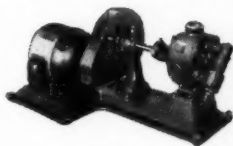


Fig. 12



SET FIRMLY—STAND STRAIGHT

FOR THE **"BIG LIFT"** IN  
**Track Jacking**

For track maintenance, including surfacing, lining, tamping-ballasting, tie plate renewal, and in conjunction with welded rail, you'll find—among other features—that Simplex Aluminum Alloy Track Jacks set more firmly and stand straighter. The large  $2\frac{1}{2}$ " x  $3\frac{1}{4}$ " forged, machined toe gives the "big lift" easily under rail or under ties without damage. Sturdy, lightweight, Aluminum Alloy housings are reinforced at all stress points. Greater bearing area of rack bar on housing gibs reduces wear. Simplex Jacks lift full capacity on toe or cap.

**SIMPLEX A5**  
Capacity 15 tons;  
weighs only 28  
lbs. 5" lift.

**SIMPLEX 15A**  
All parts inter-  
changeable with  
A5 except malle-  
able housing.  
Weights 41 lbs.

**SIMPLEX A17**  
Capacity 15 tons;  
weighs only  
41½ lbs.  
13" lift.



**Simplex**

REVER - SCREW - HYDRAULIC

**Jacks**

Write for Bulletin: Track 49

**TEMPLETON, KENLY & CO.**

1026 South Central Avenue

Chicago 44, Illinois

For **FASTER**  
**TRACK MAINTENANCE**  
with **SAFETY** and **ECONOMY**



USE A

**Mall**  
**PORTABLE  
RAIL GRINDER**

Maintenance men can smooth off rail joint welds, grind frogs, switch points, and crossings, and do a better job, when equipped with a Mall Portable Rail Grinder. Off-the-track portability of the pneumatic tire wheel-barrow mounting makes it easier to move, safer to use.

Attachments convert it for drilling rails, ties and crossing planks, drilling holes for lag screws, wire brushing, and other maintenance jobs. Variable speed 7 H.P. Gasoline Engine provides plenty of power. Patented slip-lock detail on ends of flexible shaft and various attachments speed tool changing.

32 Factory-Owned Service Stations from Coast to Coast provide quick, dependable repair service. Over 1000 Mall Portable Power Tools for a million jobs. A dealer in every town can supply you.

See Your Dealer **TODAY** or Write for **FREE** Demonstration and Literature.

**MALL TOOL COMPANY**

7746 South Chicago Avenue

Chicago 19, Illinois

## GIVING YOU MORE Good Features

The biggest water users of the nation agree that Layne Well Water Systems and Layne Vertical Turbine Pumps have more good features than any other make. They are more rugged in construction, heavier in production—and cost less to operate, giving years and years of service for the original installation cost. There is a size for every need, custom built for any depth setting. For catalogs or more information address

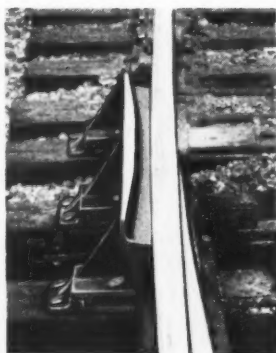
**LAYNE & BOWLER, INC.**  
GENERAL OFFICES  
MEMPHIS 8, TENN.

**LAYNE**  
**WELL WATER  
SYSTEMS**

VERTICAL TURBINE PUMPS



# Q AND C SWITCH POINT GUARDS WILL SAVE RENEWALS OF SWITCH POINTS AND STOCK RAILS



Q and C Manganese Switch Point Guards will help to keep traffic moving in yards and terminals, without delays caused by sharp wheel flanges climbing on worn points.

A full width is maintained on the head of the rail next to the guard, resulting in continued good fit for the point.

*Order now to insure these savings for your railroad.*

## OTHER Q AND C PRODUCTS:

**Derails, Guard Rail Clamps, One-Piece Manganese Guard Rails, Step Joints, Wheel Stops, Gauge Rods, Car Replacers, Snow Flangers and Plows, Skid Shoes, Anti-Slip Rail Tongs, Flangeway Brackets, Electric Snow Melters, Gauging Tools, Foot and Heel Guards.**



CHICAGO

THE Q AND C CO.

NEW YORK

Serving Railroads Since 1886.



ST. LOUIS

## ALPHABETICAL INDEX TO ADVERTISERS, APRIL, 1950

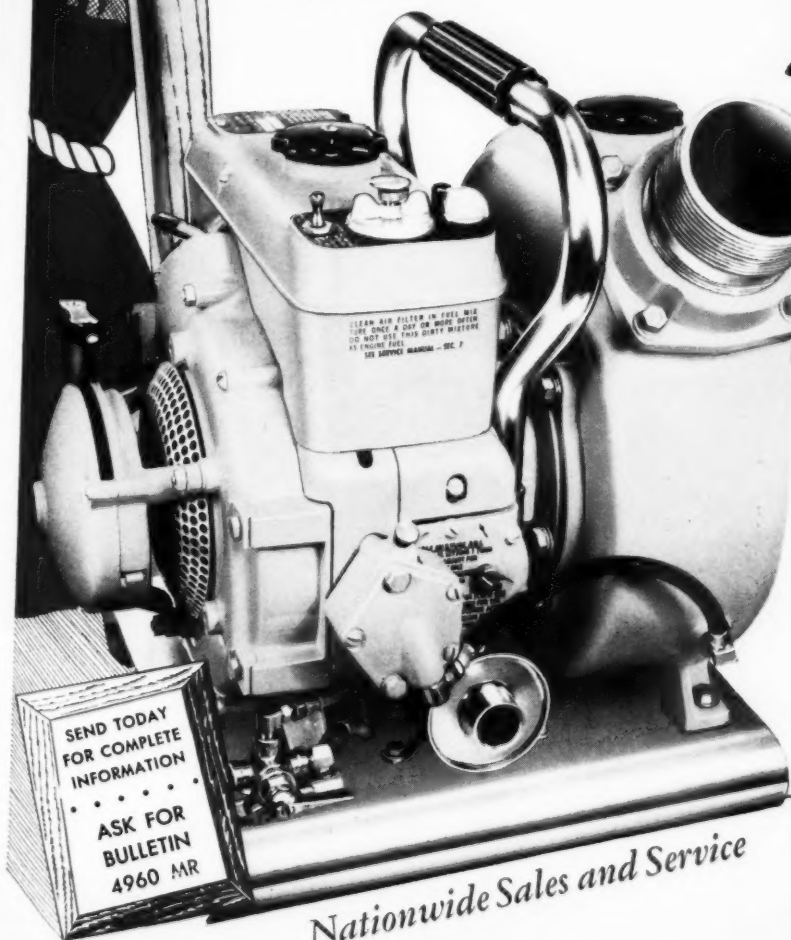
<b>A</b>		<b>H</b>		Power Ballaster Division..... 342-343	
Air Reduction Sales Company.....	349	Homelite Corporation.....	310	Pullman-Standard Car Manufacturing Company.....	342-343
Allied Chemical & Dye Corporation.....	340	Hubbard & Co.....	397	<b>Q</b>	
Allis-Chalmers Tractor Division.....	347	<b>I</b>		Q and C Co., The..... 402	
Aluminum Company of America.....	311	Industrial Brownhoist Corporation.....	404	<b>R</b>	
American Hoist and Derrick Company.....	363	Ingersoll-Rand Company.....	327	Racine Tool and Machine Company.....	385
American Lumber & Treating Company.....	392	<b>J</b>		Rails Company, The.....	336
Armco Drainage & Metal Products, Inc.....	329	Johns-Manville.....	344-345	Railway Age.....	318-319
<b>B</b>		<b>K</b>		Railway Engineering and Maintenance.....	318-319
Barco Manufacturing Co.....	352	Koppers Company, Inc.....	317	Railway Track-work Co.....	399
Beall Tool Division, Hubbard & Co.....	397	<b>L</b>		Reade Manufacturing Company, Inc.....	387
Bethlehem Steel Company.....	307	Layne & Bowler, Inc.....	401	Rust-Oleum Corporation.....	389
Blackmer Pump Company.....	394	Lewis Bolt & Nut Co.....	400	<b>S</b>	
Briggs & Stratton Corporation.....	393	Link-Belt Speeder Corporation.....	338	Simmons-Boardman Publishing Corporation.....	318-319
<b>C</b>		Littleford Bros., Inc.....	398	Speno Railroad Ballast Cleaning Co., Inc., Frank.....	313
Chapman Chemical Company.....	391	Lufkin Rule Co., The.....	398	<b>T</b>	
Chipman Chemical Company, Inc.....	395	<b>M</b>		Templeton, Kenly and Company.....	401
Cullen-Friededt Co.....	396	Magor Car Corporation.....	316	Timken Roller Bearing Company, The.....	335
<b>D</b>		Maintenance Equipment Company.....	339	Trackson Company.....	397
Dearborn Chemical Company.....	325	Mall Tool Company.....	401	<b>U</b>	
Dow Chemical Company, The.....	308-337	Massey Concrete Products Co.....	400	Union Carbide and Carbon Corporation.....	341
<b>E</b>		McCulloch Motors Corporation.....	403	Union Metal Manufacturing Co.....	326
Eaton Manufacturing Company.....	306	<b>N</b>		United States Motors Corp.....	399
Electric Tamper & Equipment Company.....	331-332-333	National Aluminate Corporation.....	315	<b>V</b>	
<b>F</b>		National Lock Washer Company, The.....	341	<b>W</b>	
Fabreeka Products Company, Inc.....	334	Nordberg Mfg. Co.....	346	Woodings Forge & Tool Co.....	381
Fairbanks, Morse & Co.....	388	Northwest Engineering Co.....	309	Woolery Machine Company.....	322
Fairmont Railway Motors, Inc.....	350	<b>O</b>			
Flintkote Company, The.....	314	Oliver Corporation, The.....	328		
<b>G</b>		Oxweld Railroad Service Company, The.....	305		
G & H Rail Controls, Inc.....	312	<b>P</b>			
General Chemical Division.....	340	Pacific Coast Borax Co.....	390		
General Electric Company.....	320-321	Portland Cement Association.....	330		

# McCULLOCH

*presents*

## THE LIGHTEST 15,000 GPH PUMP *engine and pump together weigh only 57 pounds*

Self-priming centrifugal pump with output of 15,000 gallons per hour, 250 gallons per minute, 28-foot suction lift; 3-inch outlet and inlet. Special gasoline engine develops 5 hp; automatic governor control of speed at all loads.



SEND TODAY  
FOR COMPLETE  
INFORMATION

• • • • •  
ASK FOR  
BULLETIN  
4960 MR

*Nationwide Sales and Service*

This remarkable new engine-driven pump is another achievement of the same engineering that produced the McCulloch line of chain saws

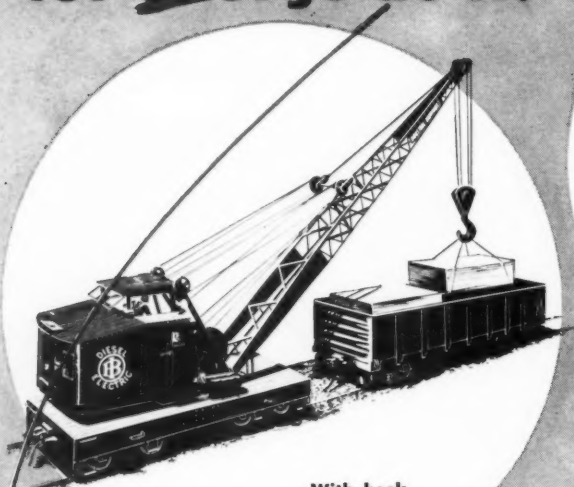
**McCULLOCH MOTORS**  
CORPORATION

LOS ANGELES 45, CALIFORNIA  
Export Department, 301 Clay Street  
San Francisco 11, California, U. S. A.

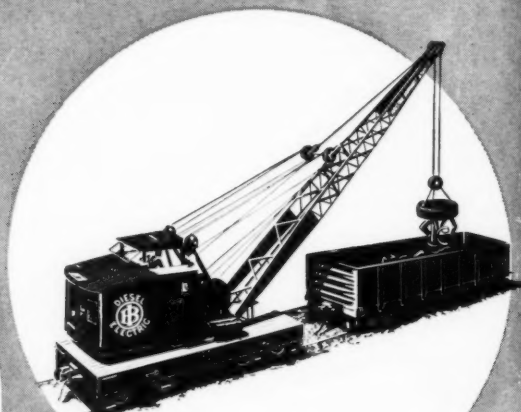


# BROWNHOIST

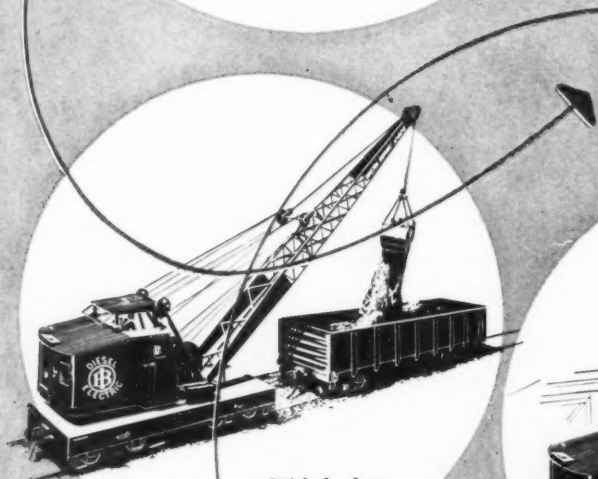
## Let George do it!



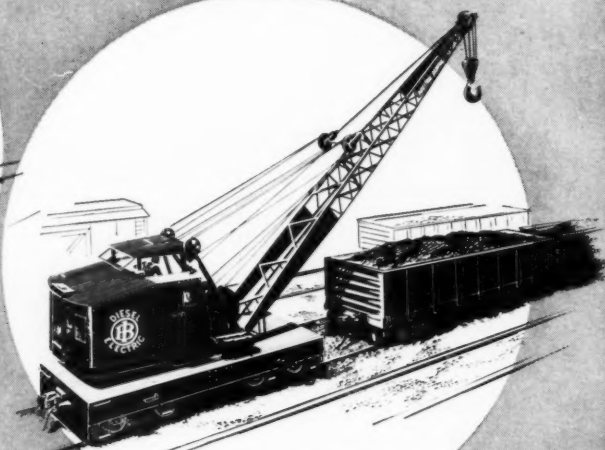
With hook



With magnet



With bucket

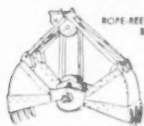


As switch engine

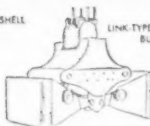
"Let Brownhoist do it" has become the slogan in more and more industries where there's a tough materials handling job to do. The reason is simple. The new Industrial Brownhoist Diesel Electric Locomotive-Crane is a most versatile worker—it performs equally well as a switch engine or as a crane operating with magnet, hook or bucket. Standard models available to meet every capacity requirement. D.E.-30, D.E.-50, D.E.-60. Plan to reduce your materials handling costs, today, with a Brownhoist Diesel Electric Locomotive-Crane. Write for complete particulars.

# BROWNHOIST

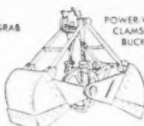
## builds better cranes



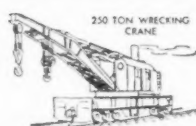
ROPE-REEVE CLAMSHELL BUCKET



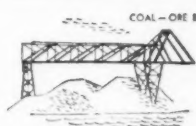
LINK-TYPE ORE GRAB BUCKET



POWER-WHEEL CLAMSHELL BUCKET



250 TON WRECKING CRANE



COAL-ORE BRIDGE

**INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN**

DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago. AGENCIES: Detroit, Birmingham, Houston, Los Angeles, Portland, San Francisco, Seattle, Spokane. Canadian Brownhoist Ltd., Montreal, Quebec.



